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July 1994

US Army Corps of Engineers
Waterways Experiment Station

Houston-Galveston Navigation Channels, Texas Project

Report 1
Galveston Bay Field Investigation

by Timothy L. Fagerburg, George M. Fisackerly, Joseph W. Parman, Clara J. Coleman

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Prepared for U.S. Army Engineer District, Galveston

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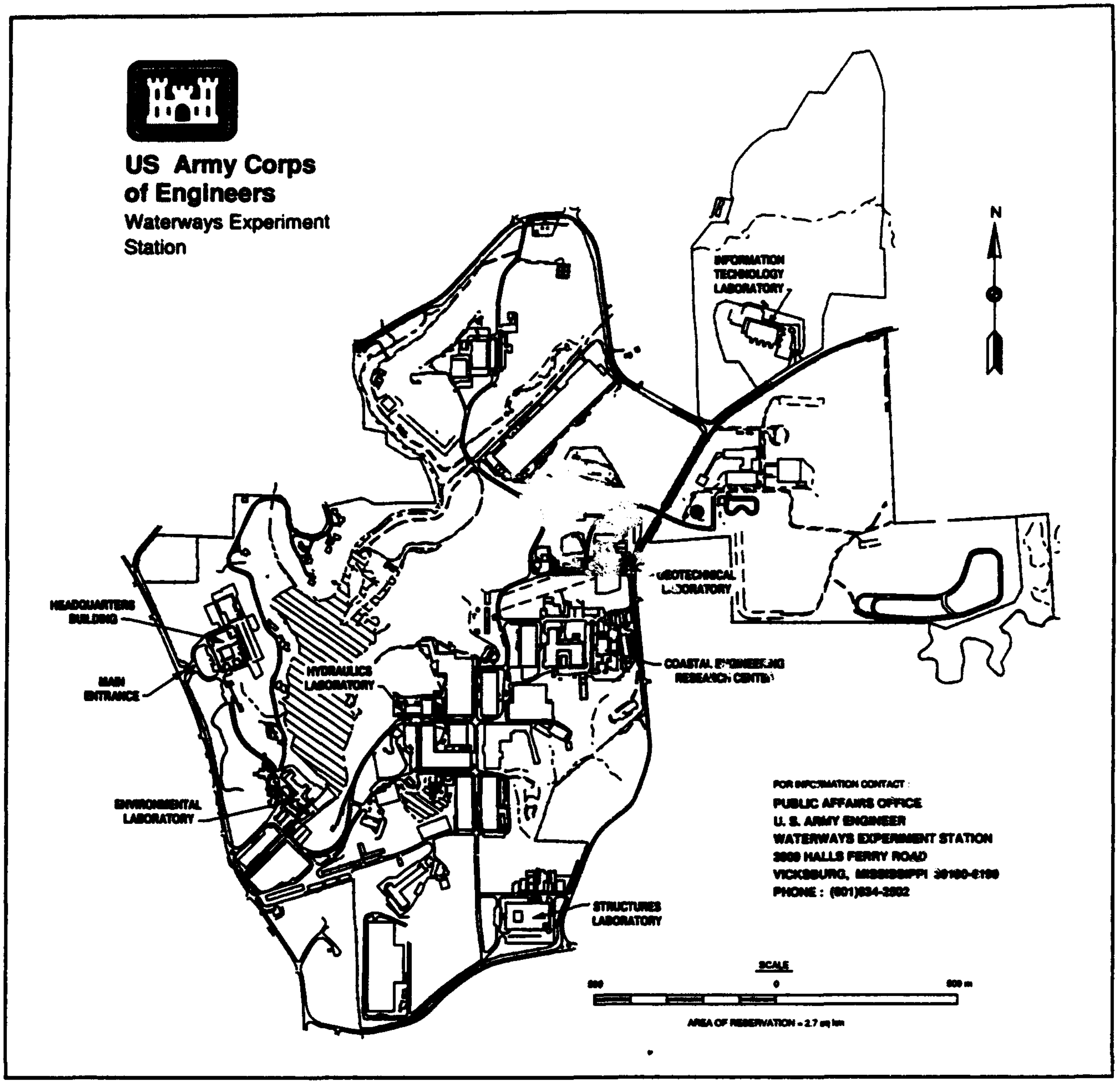
U.S. Army Corps of Engineers
Waterways Experiment Station
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

Report 1 of a series

Prepared for U.S. Army Engineer District, Galveston
P.O. Box 1229, Galveston, TX 77553



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Contents

Preface

The field investigation reported herein was conducted by the U.S. Army Engineer Waterways Experiment Station (WES), Vicksburg, MS, from 9 July 1990 through 16 January 1991, to provide the data for support of the numerical simulation of Galveston Bay for the U.S. Army Engineer District, Galveston. This effort was funded by the Galveston District under the management of Mr. M. Kieslich and Dr. T. Rennie. The WES project manager was Mr. L. M. Hauck of the Estuarine Simulation Branch, Estuaries Division (ED), Hydraulics Laboratory (HL), WES.

Personnel of the Estuarine Processes Branch (EPB), ED, performed the work under the general supervision of Messrs. F. A. Herrmann, Jr., Director, HL; R. A. Sager, Assistant Director, HL; W. H. McAnally, Jr., Chief, ED; and G. M. Fisackerly, Chief, EPB. The data collection program was designed by Messrs. Fisackerly, T. L. Fagerburg, H. A. Benson, and J. W. Parman, EPB. Data reduction was performed by Ms. C. J. Coleman, EPB, and Mr. T. L. Fagerburg. Laboratory analysis of water samples were performed by Messrs. L. G. Caviness and S. Knowles, EPB. This report was prepared by Messrs. Fagerburg, Fisackerly, and Parman, and Ms. Coleman.

At the time of publication of this report, Director of WES was Dr. Robert W. Whalin. Commander was COL Bruce K. Howard, EN.

Conversion Factors, Non-SI to SI Units of Measurement

Non-SI units of measurements used in this report can be converted to SI units as follows:

Multiply	By	To Obtain
cubic feet	0.02831685	cubic meters
degrees (angle)	0.01745329	radians
feet	0.3048	meters
inches	25.4	millimeters
knots (international)	0.5144444	meters per second
miles (U.S. nautical)	1.852	kilometers
miles (U.S. statute)	1.609347	kilometers
ounces (U.S. fluid)	0.02957353	cubic decimeters
pounds (force)	4.448222	newtons
pounds (mass)	0.4535924	kilograms

1 Introduction

Background

Galveston Bay, the largest estuary on the Texas coast, located in southeastern Texas along the Gulf of Mexico, is a biologically productive and economically important estuary (Figure 1). The important commercial and recreational fisheries include oyster, shrimp, crab, and various finfish.

The study of circulation and salinities in the Galveston Bay system is complex. A number of physical processes operate in the bay, and their relative importance can vary both spatially and temporally. Bathymetry and geometry of the bay, astronomical tide-induced currents, wind-induced circulation, density variations and resulting gravitational-induced currents, and freshwater inflow are major factors determining bay-wide circulation and salinity patterns. In addition, the proposed deepening and widening of the Galveston Entrance Channel and the Houston Ship Channel could affect both circulation and salinities throughout the bay system.

Houston Ship Channel, the major navigation channel in Galveston Bay, transects the bay from Bolivar Roads at the entrance to Galveston Bay northward to Morgans Point. The channel then continues up to the Main Turning Basin near the city of Houston. The Galveston Channel is much shorter in length and bifurcates from the Houston Ship Channel in the Bolivar Roads area. The channel reach from the inlet to the Gulf of Mexico is known as the Galveston Entrance Channel. At present the width of the Houston Ship Channel is 400 ft,[1] and the depth of 40 ft at mean low tide (mlt) is maintained along most of the route.

Channel improvements for the Houston Ship Channel and Galveston Channel are proposed in the following two phases:

a. Phase I: enlarge the Galveston Channel to a depth of 45 ft mlt and a width of 450 ft and enlarge the Houston Ship Channel to a depth of 45 ft mlt and a width of 530 ft.

[1] A table of factors for converting non-SI units of measure to SI units is found on page v.

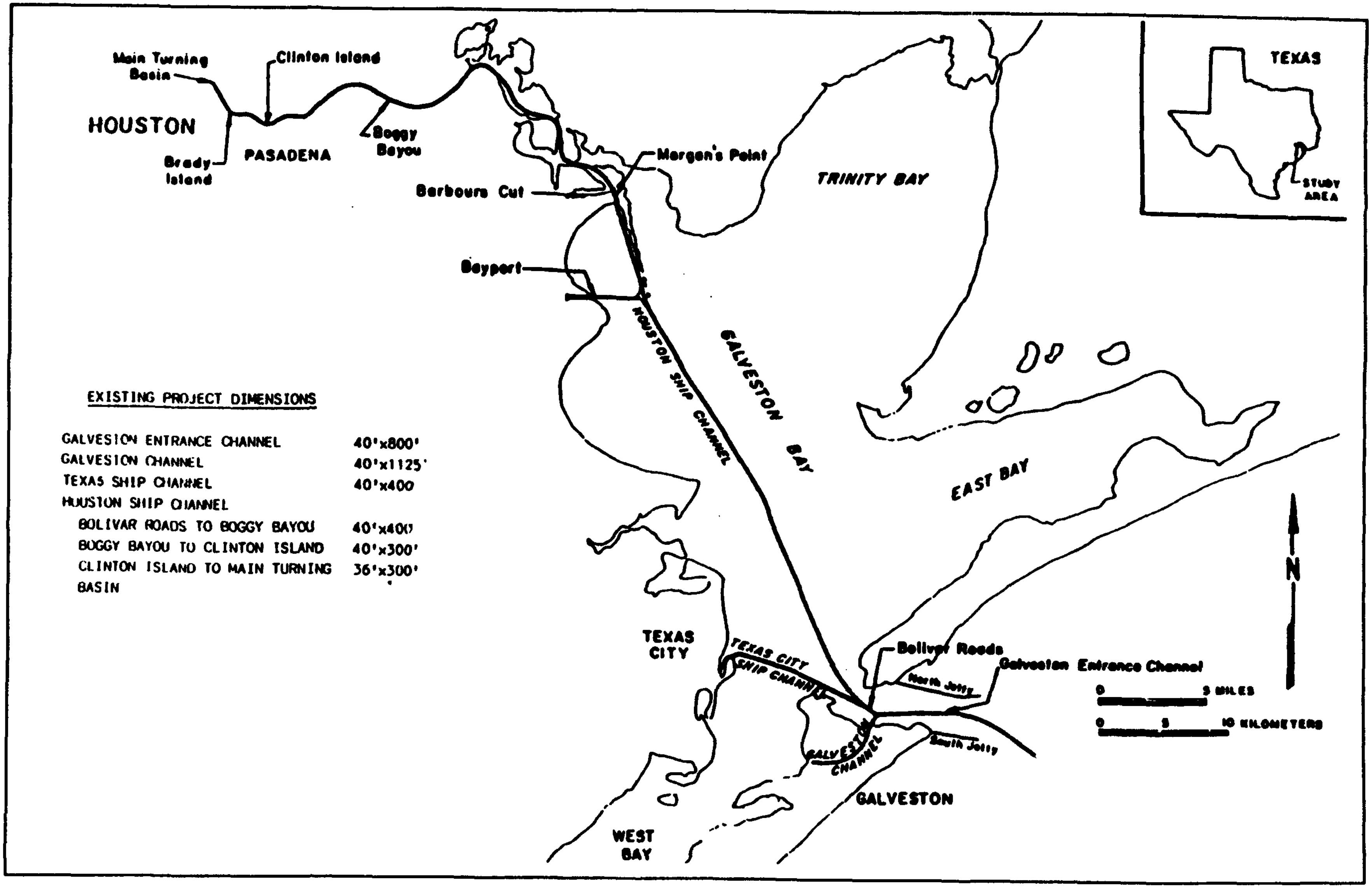

Figure 1. Location and vicinity maps

b. Phase II: deepen both channels to 50 ft mlt and widen the Houston Ship Channel to 600 ft.

The U.S. Army Waterways Experiment Station (WES) Hydraulics Laboratory is responsible for numerical model testing and long- and short-term field data collection to assess the potential effects of the channel enlargement on the hydrodynamics and transport of the system.

Purpose

The purposes of the overall Galveston Bay monitoring program are to (a) provide the necessary boundary conditions, initial conditions, and verification data for a comprehensive numerical simulation of Galveston Bay; and (b) define the hydraulic response of the bay to vessel transits and climatic events. The purpose of this report is to provide a permanent record of the instrumentation and techniques employed during the field investigation and to make the data available for use.

Scope

This report presents representative results of the field investigation of the Galveston Bay system during July 1990 through January 1991. Measurements consisted of the following:

a. Short Term

(1) Water-surface elevations.

(2) Salinity and temperature measurements.

(3) Current speed and direction profiles at fixed depths.

(4) Suspended sediment samples at each of the ranges.

(5) Wind speed and direction at a central location in the study area.

b Long term

(1) Water-surface elevations.

(2) Salinity and temperature measurements.

(3) Current speed and direction at fixed depths.

(4) Current speed and direction and salinity profiles at each instrument location at service intervals.

(5) Wind speed and direction at a central location in the study area.

This report describes the field investigation equipment and methods used to collect the data, shows representative results of the data reduction efforts, and summarizes the results of these efforts.

2 Data Collection Equipment and Program

Data were collected in Galveston Bay from 11 to 22 July 1990 as part of the short-term data collection program, and from 22 July 1990 to 16 January 1991 in the long-term data collection program. The two data collection programs were sequential, resulting in a total program duration in excess of 6 months. During these periods, water level recorders, moored current meters, and salinity recorders were in place continuously. As part of the short-term program, one intensive data collection schedule on 19-20 July (25 hr, complete tidal cycle survey) was structured around the deployment of equipment designed for the in situ recording of fixed-depth current speeds, salinity concentrations, wind speed magnitudes, and tide ranges. During the 25-hr period, over-the-side profile measurements of current speed and direction were obtained in addition to the collection of water samples for determination of suspended sediment and salinity concentrations. This data collection effort is described in the subsequent sections of this report.

Water Level Measurements

During the Galveston Bay field investigation, instruments were deployed for monitoring of water levels. These instruments are identified in Figure 2 as locations S1.0, S3.0, S5.1, S7.0, S10.0, S14.0 and S16.0. The locations of water level recorders were the same for both the intensive survey and the long-term investigation with the exception of location S5.1. At approximately the midpoint of the long-term data collection period, water level recorder S5.1 was deployed in central West Bay. The water level elevations were monitored using Environmental Devices Corporation (ENDECO) model 1029 and 1152 SSM electronic water level recorders and a Fisher Porter mechanical type water level recorder, as described in Appendix A. Salinity concentrations and temperatures were also recorded by the ENDECO 1152 SSM recorders. These sensors were deployed at locations S1.0, S7.0, and S14.0. The remaining locations recorded only water level. The single Fisher Porter water level recorder was deployed at location S16.0 on the instrument location map.

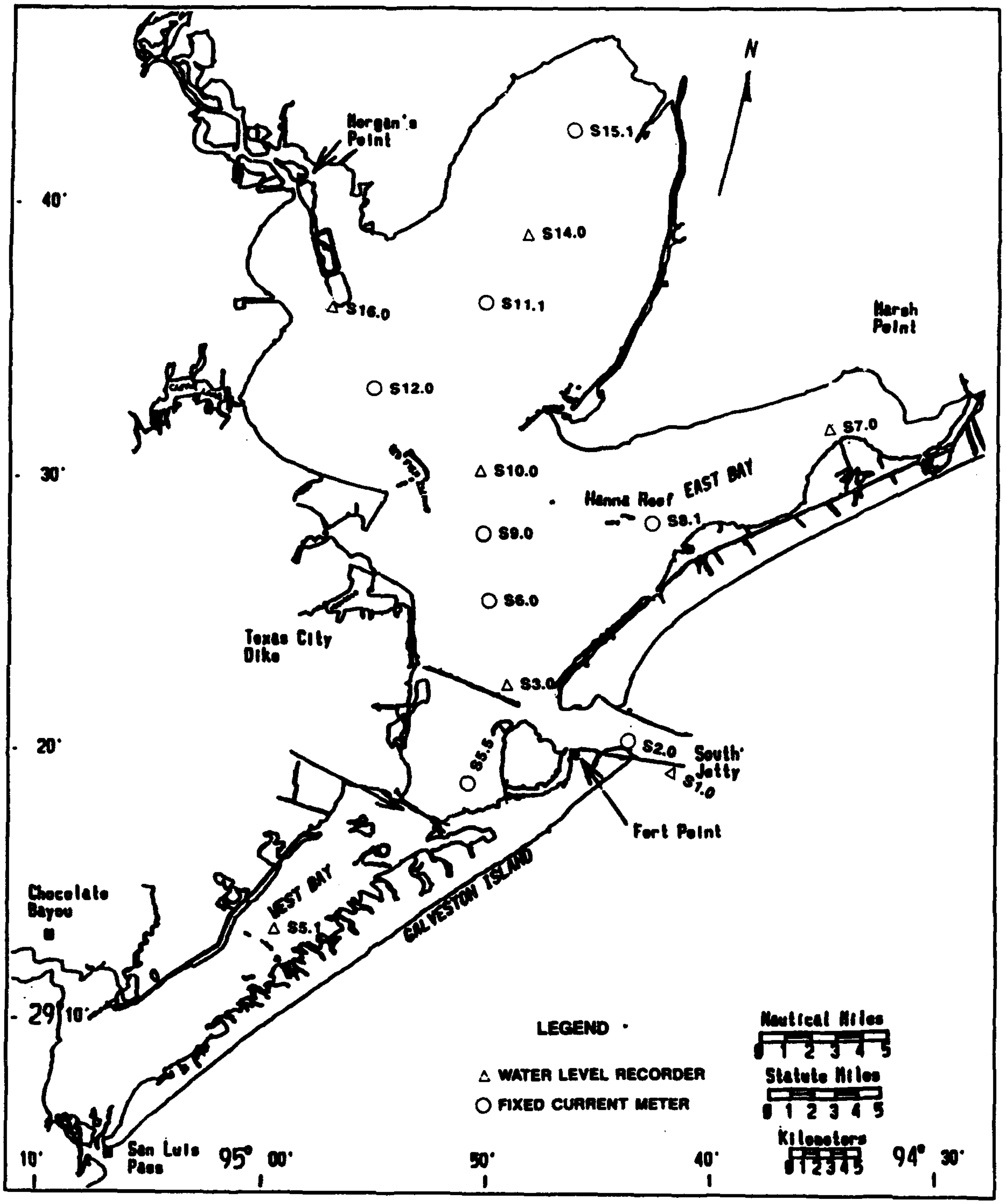

Figure 2. Water level and current speed and direction data collection equipment locations

Fixed-Depth Current Speed, Direction, Temperature, and Salinity

The fixed-depth current speed, direction, temperature, and salinity measurements were recorded using ENDECO model 174 SSM current meters similar to that described in Appendix A. At each location two meters were deployed, with one meter positioned at three-quarter depth and the other meter at mid-depth as referenced to the location depth at low tide level. Four deployment locations were chosen along the Houston Ship Channel to be monitored during both the intensive survey and long-term field investigation. These locations were designated as stations S2.0, S6.0, S9.0, and S12.0 (Figure 2). The sampling interval of these recording current meters is 10 min. At approximately the midpoint of the long-term field investigation, some of the current meters were removed from their original deployment site and redeployed elsewhere to obtain information from other areas of the bay. At these new locations a single current meter was deployed at a depth of 3 ft above the bottom. These new locations are designated by S5.5, S8.1, S11.1, and S15.1 in Figure 2.

Salinity Measurements

The salinity concentrations in Galveston Bay at locations other than those of the water level recorders and fixed-depth current meters were recorded with the Aanderaa RCM4 salinity recorder, as described in Appendix A. The salinity recorders were deployed in relatively shallow water of approximately 6 to 8-ft depth. The instruments were positioned at a depth of 2 ft above the bottom. A total of five deployment locations were chosen for both the intensive survey and long-term field investigation. They are designated as stations S4.0, S5.0, S8.0, S10.0, S11.0, S13.0, S14.1, and S15.0, as shown in Figure 3. At approximately the midpoint of the long-term field investigation, several of the salinity recorders (S5.0, S8.0, S11.0, S15.0) were removed from their original deployment site and relocated elsewhere to obtain information from other areas of the bay. These new locations also monitored the salinity within the relatively shallow areas of the bay and are designated as stations S9.5, S11.2, S11.5, S12.5, S14.1 and S15.0 (Figure 3). The sampling interval for these recorders was 30 min. Additional short-term monitoring of salinity in the shallow-water area adjacent to the channel was performed using a unique profiling system called an Estuarine Boundary Layer Investigation System (EBIS). This instrument is described in further detail in Appendix B. This profiling capability of the instrument enabled the monitoring of salinity concentration changes in the near-bottom zone. Tidal and ship passage effects on salinity concentrations were observed and recorded by the EBIS. The EBIS was deployed on the west side of the Houston Ship Channel immediately southeast of the tide gauge location S10.0. The measurements were obtained during two separate 25-hr deployment periods. The first deployment occurred simultaneously with the intensive survey period and the second deployment occurred at the midpoint of the long-term field investigation period.

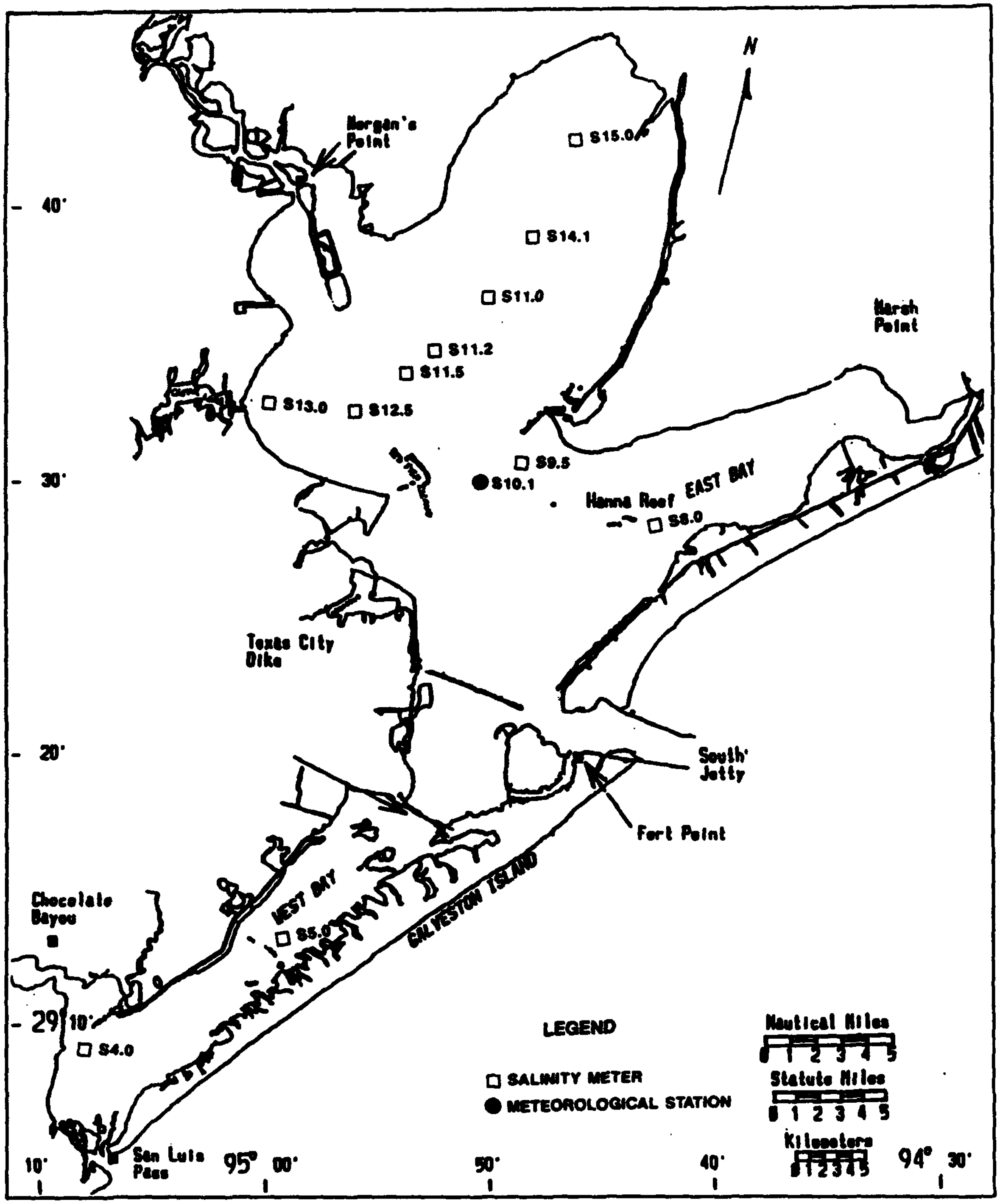

Figure 3. Salinity and weather data collection equipment location map

Current Speed and Direction Measurements

During the intensive survey, five boats deployed instruments over the side to collect current speed and direction profiles using portable equipment as described in Appendix A. One boat was stationed at each of the five data collection ranges identified as R1.0, R2.0, R3.0, R4.0, and R5.0. The data collection ranges, shown in Figure 4, consisted of two to four stations each. Measurements were made at three to five depths.

Data Collection Range Locations

For the 25-hr intensive data collection survey, the five data ranges were selected to yield the information most applicable to numerical studies of ship navigation. The general locations of these ranges are shown in Figure 4. Range R1.0 was located in the Galveston Entrance Channel near channel marker 13. Four stations were chosen for this range and were equally spaced across the channel. Stations 1-B and 1-C were located at the edges of the channel, and stations 1-A and 1-D were located at positions outside of the navigation channel. Range R2.0, located at the channel markers 25 and 26 immediately above the Bolivar Roads junction with the Houston Ship Channel, also had four stations equally spaced across the range. Range R3.0, located near channel marker 41 in the Houston Ship Channel, had four stations equally spaced across the range, with stations B and C approximately 400 ft apart at the western and eastern edges of the channel, respectively. Stations A and D were located approximately 200 ft from stations B and C, respectively. Range R4.0 was located between channel markers 69 and 70 of the Houston Ship channel. The same station locations were used as those previously described. Range R5.0 was located in the land-locked area of the Houston Ship Channel near the town of Lynchburg, TX, at channel marker 125. Due to the narrow channel at this location, only two stations were established for collecting the data.

Boat Procedures

Prior to the beginning of the survey, the boats assigned to each range deployed anchors and mooring lines at each of the stations. The mooring lines were attached to large inflated buoys for retrieving the lines during each sampling period. The boat moved into position at each of the buoys and used the anchored line to hold a steady position in the current while data collection was being performed. The data at each station were obtained once per hour. At each of the stations, the current speed and direction and water samples were collected at a minimum of three depths: bottom, middepth, and surface. The bottom measurement was made 2 ft from the actual bottom. The middepth measurement was obtained at half the measured depth. The surface measurement was obtained 3 ft below the water surface. Where the water

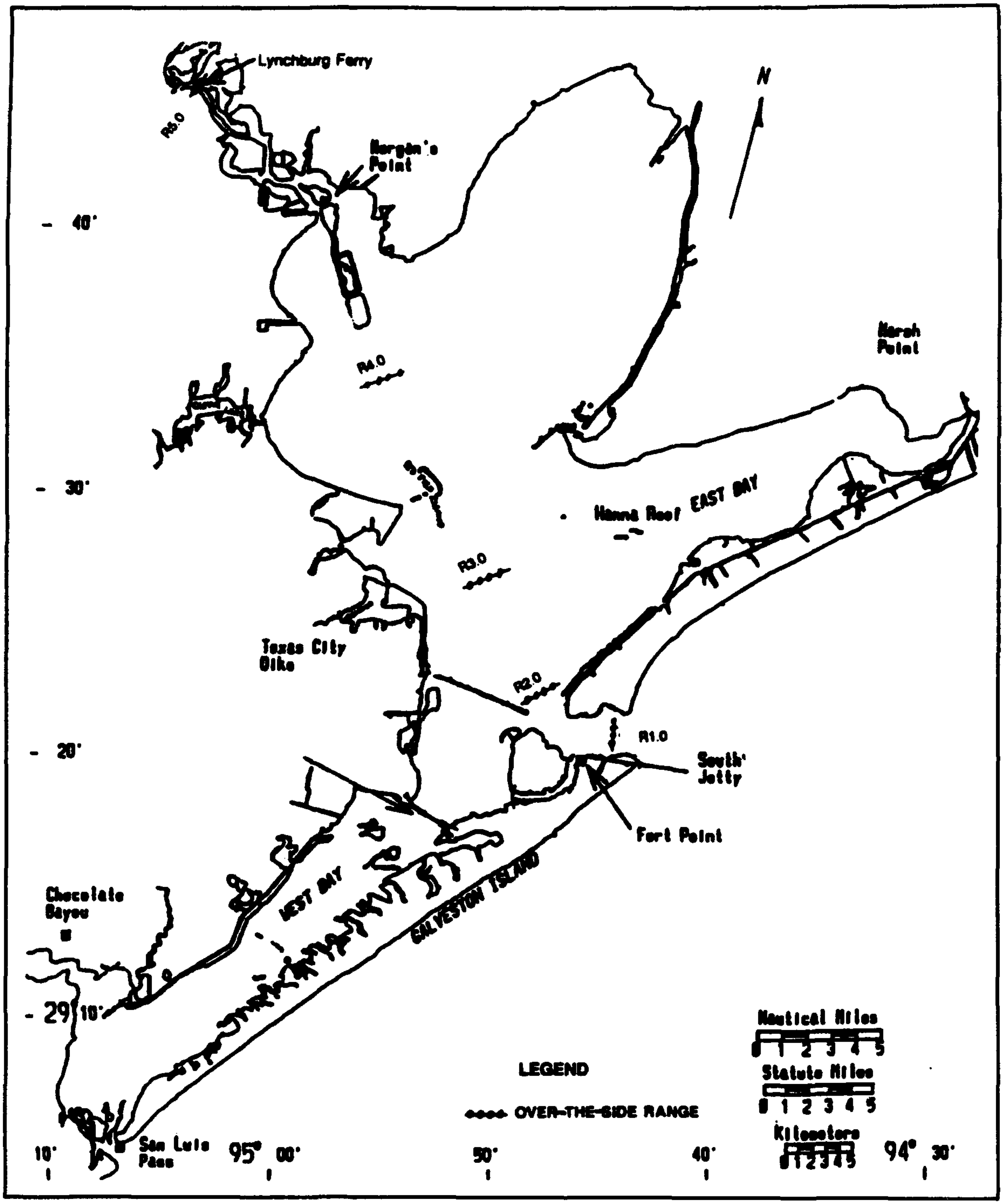

Figure 4. Intensive survey data collection boat ranges

depth was greater than 35 ft, measurements were also taken at the quarter- and three-quarter depths. At several of the ranges a portable salinity meter was employed to obtain the real-time salinity value at the velocity measurement depth. This measurement also provided a field check for the laboratory analysis of the water samples.

Suspended Sediment and Salinity Water Samples

During the intensive data collection period, discrete water samples for analyses of suspended sediment and salinity concentrations were obtained at each depth that a velocity reading was taken. The samples were obtained by pumping the water from the desired depth to a collection point at the surface. The pumping system used is described in Appendix A.

Meteorological Measurements

The wind conditions during the entire field investigation were recorded using a HANDAR Model No. 540-A data acquisition system. This equipment is described in detail in Appendix A. The recorder was situated in the central part of the bay on a U.S. Coast Guard (USCG) navigation range marker near the Red Fish Reef area and is identified as station S10.1 in Figure 3. The recorder was programmed to record mean wind speed and direction each 15-min period.

Laboratory Analysis of Water Samples for Salinities

The individual water samples collected during the intensive survey were analyzed for sediment and salt content in the laboratory at WES. The techniques used for this analysis are described in detail in Appendix A.

Long-Term Field Investigation Equipment Service Procedures

At about 14-day intervals, all the equipment was cleaned and checked for proper operation, new batteries installed, stored data retrieved, and new recording medium installed where applicable. One of the major problems with this type of deployment is destruction of the submerged moored current meters by commercial fishing nets. The Galveston Bay area contains a very busy commercial fishing industry. The deployment locations were marked with surface floats, registered with the local USCG, and published in the Local Notice to Mariners. However, several current meters were lost despite these precautions. Table 1 presents a deployment time-history of all the equipment locations for the study period.

Quality Control/Data Quality Assurance

During the scheduled instrument maintenance intervals, quality control techniques were employed to provide information on the quality of the data being obtained. The data collected included vertical profiles of velocity, direction, and salinity at each instrument deployment location. Water samples were also obtained at the depth of each sensor for laboratory analysis of the salinity concentrations. The information provided a determination of the relative accuracy of the velocity data and the effects of biological growth on the salinity sensors.

3 Data Presentation

Intensive Survey

Water level measurements

The variations of the water-surface elevation observed during the intensive survey are listed in Tables 2-7. Time-history plots of the water-surface data for a period of 12 hr prior to and following the survey are shown in Plates 1-6. A mean water-surface elevation was used as a datum in each of the plots to facilitate the illustration of the tide ranges. The mean value was computed using the water-surface elevation data for the time period in each plot. The water-surface elevations are not referenced to the National Geodetic Vertical Datum. Water level recorders S1.0, S3.0, S7.0, S10.0, S14.0, and S16.0 appeared to function properly during this period.

The data from S1.0 were used as a reference station for comparison with the data from the other stations to estimate tidal phase and range differences between the entrance and the upper reaches of Galveston Bay. This comparison illustrated that tide ranges observed were small, with the maximum tidal range observed at S1.0 of 3.43 ft, 1.52 ft at S3.0, and 1.77 ft at S16.0 on 19 July. The comparison also showed a tide phase difference of 6 hr between S1.0 and S16.0 occurring on 19 July (between the hours of 0210 and 0830) in the time of high water. The high-water time lag between S3.0 and S16.0 was 1 hr.

Over-the-side velocity measurements

Tables 8-25 are time-series listings of the over-the-side current speed data obtained at the five ranges as described in the section, "Data Collection Range Locations." Plates 7-38 are time-history plots of the velocity data for each range during the intensive survey. The ebb and flood directions in the plots were determined from the direction of the current relative to the orientation of the range from the north azimuth. The current directions in Tables 8-25 indicate the direction from which the water was flowing. The ebb and flood directions were 90 deg, less than or greater than, respectively, the orientation of the range. The maximum velocity observed at the lower range, R1.0, was a

surface measurement of 4.9 fps in the ebb direction at station C (in the channel). The maximum velocity observed at range R2.0 was a surface measurement of 5.8 fps in the flood direction at station C (in the channel). The maximum velocity at upper range R5.0 was a surface measurement of 1.3 fps in the ebb direction at station A (in the channel).

Prior to the survey, high freshwater inflow from flooding on the Trinity River contributed to the flow in the channel. The Trinity River flood flow peaked in late May at over 100,000 cfs and very gradually decreased to less than 10,000 cfs by the time of the survey. However, due to the large size of Galveston Bay and the reduced freshwater inflow at the time of the survey, there appeared to be no large nontidal variations in the magnitude and direction of the currents. No significant eddies or unusual flow circulation patterns were observed at any stations.

Fixed-depth velocity measurements

Time-histories of the current speeds and salinities from the fixed-depth current meters during the intensive survey are shown in Plates 39-46. The maximum current speed observed (4.5 fps) occurred at meter location S2.0. The magnitudes and directions of the current speeds observed for these deployment locations agreed very closely with the information obtained from nearby over-the-side velocity data collection ranges. The ebb and flood directions shown in the time-histories were determined by the same techniques used for the over-the-side data.

Salinity measurements

The results of the sample analysis for salinities at each sample station during the 25-hr period of the survey are listed in Tables 26-43. The salinity values obtained from the moored current meter deployments are shown in Plates 39-46. Maximum near-surface salinity values for the survey data collection ranges R1.0 and R5.0 were 27.1 ppt and 10.6 ppt, respectively. Likewise, the minimum near-surface salinity values were 16.0 ppt and 8.5 ppt for ranges R1.0 and R5.0, respectively. Vertical stratification of salinities varied widely over the tidal cycle. The ranges of stratification from surface to bottom during the strength of flood tide at each data collection range were 0.4 ppt (R1.0), 0.9 ppt (R2.0), 1.2 ppt (R3.0), 1.2 ppt (R4.0), and 0.2 ppt (R5.0). The range of stratification from surface to bottom during the strength of ebb tide at each range were 5.0 ppt (R1.0), 4.9 ppt (R2.0), 2.6 ppt (R3.0), 4.0 ppt (R4.0), and 1.0 ppt (R5.0). The maximum surface to bottom salinity stratification at ranges R1.0 and R2.0 were 10.5 ppt and 13.1 ppt, respectively, occurring at or near surface slack-water conditions. The maximum salinity stratification at ranges R3.0, R4.0, and R5.0 were 8.0 ppt, 5.6 ppt, and 1.9 ppt, respectively, occurring generally during the ebb tide phase. Therefore, the data indicate vertical stratification of salinity in the channel during the ebb tide phase and

partial mixing during the flood tide phase. Results of the salinity data analysis from the EBIS deployment are given in Appendix B.

Suspended sediment measurements

The results of the laboratory analysis for suspended sediments from samples obtained during the intensive survey are presented in Tables 26-43. Near-bottom samples obtained at ranges R1.0 and R2.0 during the ebb tide phase generally contained the greatest concentrations of suspended sediments. The highest concentration (214 mg/l) measured occurred at range R1.0, station B. In the shallow areas along the channel, the concentrations were generally less than 60 mg/l. The few higher concentrations observed in the shallow areas occurred as the tide was changing direction.

Meteorological measurements

The time-history plot of the mean wind speed and direction obtained from the HANDAR Model No. 540-A Data Acquisition system during the intensive survey is shown in Plate 50. The maximum wind speed recorded during this period was 21 mph from the north.

Long-Term Field Investigation

Water level measurements

Water level data for the long-term field investigation are plotted in Plates 51-109. Table 1 presents a time-history chart of the operation of all the equipment installed in the Galveston Bay study area. Water level recorders S1.0, S3.0, S5.1, S7.0, S10.0, S14.0, and S16.0 functioned properly during most of the data collection period. The percent of time in service over the investigation period for these instruments ranged from 92 to 100 percent.

The data from S1.0 display the tide range extremes for the system during the period of the study. The highest tide range observed at location S1.0 was 5.8 ft and occurred on 9 November 1990. At this same time, the highest tide range observed on the interior of the bay was 4.4 ft at location S3.0. However, these tide ranges involved not only astronomical tides but meteorological forcing from a strong frontal passage. The mean tide range at location S1.0 for the long-term period was 3.0-3.5 ft. The mean tide ranges for the interior locations were 1.0-1.5 ft.

Fixed-depth velocity measurements

Time-histories of the current speeds and salinities during the long-term data collection period are shown in Plates 110-163. The quality control data are

also plotted on these plates. The history of the current meter operation at each deployment location is shown in Table 1. Dates of the periods of lost data are estimates and are based on date of the service period prior to their disappearance. During a few of the equipment service trips, some of the meter deployments were found to be missing the support floats, which meant that the meter had been resting on the bottom and not recording any velocities. The effect of this is evident in Plate 148 where the velocity value is consistently a zero reading. Another problem that occurred is that the impeller may have been fouled by floating debris that eventually became dislodged, allowing the meter to begin functioning properly. An example of this is seen in Plates 152 and 154. The percent of time in service for these instruments, as illustrated in Table 1, ranged from 48 to 100 percent.

Salinity measurements

Salinity concentrations were continuously recorded at the locations of the fixed-depth current meters, some of the tide gauges, and the salinity recorders. The salinities measured from the fixed-depth current meter deployments are shown in Plates 110-163. The salinity recordings at tide gauge stations S1.0, S7.0, and S14.0 during the long-term field investigation are shown in Plates 164-176. The salinities recorded by the Aanderaa RCM4 recorders are shown in Plates 177-201. The quality control values of salinity and velocity, obtained at the various instrument locations during equipment service intervals, are plotted to illustrate the relative accuracy of the data.

Biological fouling of the salinity sensors is one of the major contributors to the differences seen between the quality control measurements and the recorded information. An example of this can be seen in Plates 120 and 137-138. The measured salinity generally agreed with the quality control measurements immediately after the sensor was serviced. Three of the Aanderaa meters, relocated at the midpoint of the long-term survey to monitor other areas of the bay, developed mechanical problems and failed to record any data during the second deployment period at locations S9.5, S11.5 and S12.5. The percent of time in service over the duration of the investigation for the Aanderra salinity recorders ranged from 0 to 100 percent.

Salinities in the Galveston Bay system showed wide ranges, especially early in the investigation. The salinities within West Bay were higher at station S4.0 than in East Bay at station S8.0 by approximately 10 ppt. The extremely large influx of freshwater inflow from the Trinity River into Trinity Bay between May and June 1990 is still evident in the low salinities (1.0-4.0 ppt) recorded at station S15.0 (Plate 199). As the long-term data collection progressed, the salinity concentration in this area increased. The recorded salinities reflected a change of approximately 10 ppt to a mean level of 15 ppt.

Meteorological measurements

Wind speeds and directions during the long-term data collection periods are shown in Plates 202-208. A break in the recorded wind conditions was experienced from 28 August through 28 September 1990 when a problem developed in the data storage capabilities of the system. This problem was later resolved and data collection was resumed. The plots of the wind data illustrate the seasonal variations of the prevailing wind conditions within Galveston Bay. The percent of time the meteorological unit was in service over the investigation period was 92 percent.

Water temperature measurements

As stated previously, water temperatures were recorded by the fixed-depth current meters and several water level recorders. The time-history plots of water temperature changes at the current meter locations are shown in Plates 209-270. The changes in water temperature at the water level recorders, S1.0, S5.0, S7.0, and S14.0, are shown in Plates 271-303. Seasonal variations of water temperature can be observed in these plots. The most extreme temperature change was observed between 22-24 December as the result of the passage of a cold front. The wind speed and direction of this front can be observed in Plate 207. The water temperature change of 15 °C is evident at the fixed-depth current meters (Plates 259-264) and at the water level recorders (Plates 297-299). In general, changes in water temperatures were gradual with this one exception.

4 Summary

The data presented herein were collected from the 25-hr intensive survey and 189-day sampling efforts within Galveston Bay. The following observations were made:

a. During the intensive survey (19-20 July), the maximum range of tide occurred at station S1.0, 3.43 ft. The maximum ranges of tide from station S3.0, lower bay, to station S16.0, upper bay, were 1.52 ft and 1.77 ft, respectively.

b. The average tide range over the long-term field investigation (22 July 1990-16 January 1991) for the tide gauge located near the Galveston Bay Entrance Channel, S1.0, was 3.0-3.5 ft. The average tide ranges for the tide gauges located in the interior of the bay were between 1.0-1.5 ft. The maximum tide range observed (5.8 ft) occurred at tide gauge S1.0.

c. The maximum velocities observed for the intensive survey occurred at the strength of ebb of the tidal cycle. The maximum recorded velocity was 5.8 fps at range R2.0, station C. The velocities obtained from the fixed-depth current meters were found to be in general agreement with those values measured from the over-the-side equipment for the intensive survey period.

d. Suspended sediment concentrations were found to be generally greater near the bottom of the channel. The highest concentration observed was 214 mg/l at range 1.0, station B.

e. Salinity concentrations obtained during the intensive survey period indicated that the lower portion of the bay could be described as being well mixed, while the upper portions could be described as being partly to well mixed.

Table 1
Galveston Bay Study Equipment Log

Equipment Type	Station No.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Days of Data Recorded	Days of Deployment	Percent of Data Retrieved
ENDECO 1152 Tide Gauge	S1.0		Out of Service						175	189	92
174 SSM Current Meter	S2.0		Out of Service						175	189	92
ENDECO 1029 Tide Gauge	S3.0								189	189	100
AANDERAA Salinity Meter	S4.0								189	189	100
AANDERAA Salinity Meter	S5.0					Pulled from Service Installed at New Location			97	97	100
ENDECO 1029 Tide Gauge	S5.1			New Location					91	91	100
174 SSM Current Meter	S5.5				New Location				63	63	100
174 SSM Current Meter	S6.0		Out of Service			Pulled from Service Installed at New Location			84	98	85
ENDECO 1152 Tide Gauge	S7.0		Out of Service						175	189	92

(Continued)

(Sheet 1 of 4)

Table 1 (Continued)

Equipment Type	Station No.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Days of Data Recorded	Days of Deployment	Percent of Data Retrieved
AANDERAA Salinity Meter	S8.0						Pulled from Service Installed at New Location		97	97	100
174 SSM Current Meter	S8.1				New Location				62	62	100
174 SSM Current Meter	S9.0		Out of Service						37	78	48
AANDERAA Salinity Meter	S9.5				New Location				0	62	0
ENDECO 1150 Tide Gauge	S10.0						Pulled from Service		91	97	94
HANDAR Weather Station	S10.1								154	189	82
AANDERAA Salinity Meter	S11.0							Pulled from Service Installed at New Location	128	128	100
174 SSM Current Meter	S11.1				New Location				63	63	100
AANDERAA Salinity Meter	S11.2				New Location				62	62	100
AANDERAA Salinity Meter	S11.5				New Location				62	62	100

(Continued)

(Sheet 2 of 4)

Table 1 (Continued)

Equipment Type	Station No.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Days of Data Recorded	Days of Deployment	Percent of Data Retrieved
174 SSM Current Meter	S12.0				Pulled from Service Installed at New Location				50	56	89
174 SSM Current Meter	S12.1						Meter Lost 12/11 Not Replaced		79	105	75
AANDERAA Salinity Meter	S12.5				New Location				0	62	0
AANDERAA Salinity Meter	S13.0			Out of Service					151	189	80
ENDECO 1029 Tide Gauge	S14.0	1162		1029					189	189	100
AANDERAA Salinity Meter	S14.1								189	189	100
AANDERAA Salinity Meter	S15.0						Pulled from Service Installed at New Location		127	127	100
174 SSM Current Meter	S15.1				New Location				62	62	100

(Continued)

Table 1 (Concluded)

Equipment Type	Station No.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Days of Data Recorded	Days of Deployment	Percent of Data Retrieved
FISHER-PORTER Tide Gage	S16.0								180	189	95
									3,105	3,472	

3,105 = Days of Data Recorded
3,472 = Days of Deployment
Percent of Time in Service = 3,105/3,472
= 89 Percent

Table 2
Water-Surface Elevations for Station S1.0

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/18/90	19:00	26.3	-1.34
07/18/90	19:10	26.3	-1.39
07/18/90	19:20	26.1	-1.39
07/18/90	19:30	25.9	-1.37
07/18/90	19:40	25.6	-1.32
07/18/90	19:50	26.0	-1.23
07/18/90	20:00	25.5	-1.18
07/18/90	20:10	25.7	-1.12
07/18/90	20:20	25.6	-0.99
07/18/90	20:30	25.7	-0.92
07/18/90	20:40	25.8	-0.88
07/18/90	20:50	25.8	-0.85
07/18/90	21:00	25.4	-0.75
07/18/90	21:10	25.8	-0.62
07/18/90	21:20	25.8	-0.57
07/18/90	21:30	26.0	-0.43
07/18/90	21:40	26.0	-0.38
07/18/90	21:50	26.0	-0.25
07/18/90	22:00	26.0	-0.19
07/18/90	22:10	26.1	-0.17
07/18/90	22:20	26.1	-0.00
07/18/90	22:30	26.2	+0.15
07/18/90	22:40	26.1	+0.21
07/18/90	22:50	26.2	+0.28
07/18/90	23:00	26.2	+0.33
07/18/90	23:10	26.2	+0.42
07/18/90	23:20	26.3	+0.51
07/18/90	23:30	26.3	+0.52
07/18/90	23:40	26.3	+0.66
07/18/90	23:50	26.3	+0.74
07/19/90	00:00	26.3	+0.76
07/19/90	00:10	26.3	+0.84

(Sheet 1 of 10)

Table 2 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	00:20	26.2	+0.94
07/19/90	00:30	26.3	+1.00
07/19/90	00:40	26.3	+1.17
07/19/90	00:50	24.6	+1.24
07/19/90	01:00	23.5	+1.30
07/19/90	01:10	23.2	+1.34
07/19/90	01:20	23.4	+1.36
07/19/90	01:30	23.7	+1.39
07/19/90	01:40	23.9	+1.43
07/19/90	01:50	24.1	+1.42
07/19/90	02:00	24.3	+1.47
07/19/90	02:10	24.4	+1.52
07/19/90	02:20	24.4	+1.48
07/19/90	02:30	24.5	+1.46
07/19/90	02:40	24.5	+1.50
07/19/90	02:50	24.7	+1.47
07/19/90	03:00	24.8	+1.51
07/19/90	03:10	24.9	+1.47
07/19/90	03:20	24.9	+1.49
07/19/90	03:30	25.2	+1.44
07/19/90	03:40	25.3	+1.42
07/19/90	03:50	25.3	+1.41
07/19/90	04:00	25.3	+1.40
07/19/90	04:10	25.4	+1.33
07/19/90	04:20	25.4	+1.29
07/19/90	04:30	25.5	+1.26
07/19/90	04:40	25.5	+1.26
07/19/90	04:50	25.6	+1.27
07/19/90	05:00	25.7	+1.22
07/19/90	05:10	25.8	+1.22
07/19/90	05:20	26.4	+1.25
07/19/90	05:30	26.4	+1.15
07/19/90	05:40	26.5	+1.11

Table 2 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	05:50	26.5	+1.10
07/19/90	06:00	26.5	+1.10
07/19/90	06:10	26.5	+1.14
07/19/90	06:20	26.5	+1.08
07/19/90	06:30	26.5	+1.04
07/19/90	06:40	26.5	+1.03
07/19/90	06:50	26.5	+1.03
07/19/90	07:00	25.5	+0.98
07/19/90	07:10	25.3	+0.90
07/19/90	07:20	25.2	+0.85
07/19/90	07:30	25.0	+0.88
07/19/90	07:40	25.1	+0.85
07/19/90	07:50	24.9	+0.83
07/19/90	08:00	24.9	+0.71
07/19/90	08:10	25.0	+0.63
07/19/90	08:20	25.2	+0.61
07/19/90	08:30	25.4	+0.67
07/19/90	08:40	25.5	+0.60
07/19/90	08:50	25.6	+0.62
07/19/90	09:00	25.7	+0.63
07/19/90	09:10	25.8	+0.66
07/19/90	09:20	25.8	+0.62
07/19/90	09:30	25.8	+0.51
07/19/90	09:40	25.8	+0.53
07/19/90	09:50	25.8	+0.55
07/19/90	10:00	26.0	+0.60
07/19/90	10:10	26.0	+0.59
07/19/90	10:20	25.9	+0.65
07/19/90	10:30	26.0	+0.71
07/19/90	10:40	26.0	+0.65
07/19/90	10:50	26.0	+0.58
07/19/90	11:00	25.8	+0.60
07/19/90	11:10	26.0	+0.69
			(Sheet 3 of 10)

Table 2 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	11:20	26.1	+0.73
07/19/90	11:30	26.2	+0.76
07/19/90	11:40	26.2	+0.72
07/19/90	11:50	26.2	+0.69
07/19/90	12:00	26.3	+0.69
07/19/90	12:10	26.2	+0.68
07/19/90	12:20	26.2	+0.58
07/19/90	12:30	26.2	+0.56
07/19/90	12:40	26.2	+0.51
07/19/90	12:50	26.2	+0.48
07/19/90	13:00	26.1	+0.43
07/19/90	13:10	26.2	+0.39
07/19/90	13:20	26.2	+0.36
07/19/90	13:30	26.2	+0.28
07/19/90	13:40	26.1	+0.22
07/19/90	13:50	26.0	+0.12
07/19/90	14:00	26.0	+0.00
07/19/90	14:10	26.0	-0.13
07/19/90	14:20	25.9	-0.24
07/19/90	14:30	25.8	-0.24
07/19/90	14:40	25.9	-0.22
07/19/90	14:50	25.8	-0.36
07/19/90	15:00	25.8	-0.51
07/19/90	15:10	25.4	-0.56
07/19/90	15:20	25.5	-0.63
07/19/90	15:30	25.5	-0.74
07/19/90	15:40	25.5	-0.84
07/19/90	15:50	25.5	-0.96
07/19/90	16:00	25.5	-1.03
07/19/90	16:10	25.5	-1.08
07/19/90	16:20	25.5	-1.22
07/19/90	16:30	25.5	-1.20
07/19/90	16:40	25.4	-1.27

Table 2 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	16:50	25.4	-1.33
07/19/90	17:00	25.4	-1.36
07/19/90	17:10	25.4	-1.46
07/19/90	17:20	25.3	-1.47
07/19/90	17:30	25.4	-1.52
07/19/90	17:40	25.4	-1.50
07/19/90	17:50	25.4	-1.50
07/19/90	18:00	25.2	-1.65
07/19/90	18:10	25.0	-1.77
07/19/90	18:20	24.7	-1.77
07/19/90	18:30	24.9	-1.77
07/19/90	18:40	24.5	-1.85
07/19/90	18:50	24.2	-1.86
07/19/90	19:00	24.2	-1.88
07/19/90	19:10	24.0	-1.91
07/19/90	19:20	23.3	-1.90
07/19/90	19:30	23.2	-1.84
07/19/90	19:40	22.7	-1.89
07/19/90	19:50	24.0	-1.85
07/19/90	20:00	24.0	-1.74
07/19/90	20:10	24.1	-1.66
07/19/90	20:20	24.2	-1.56
07/19/90	20:30	24.3	-1.49
07/19/90	20:40	24.5	-1.45
07/19/90	20:50	24.6	-1.45
07/19/90	21:00	25.2	-1.32
07/19/90	21:10	25.2	-1.25
07/19/90	21:20	24.5	-1.22
07/19/90	21:30	25.5	-1.13
07/19/90	21:40	25.5	-1.01
07/19/90	21:50	25.5	-0.86
07/19/90	22:00	25.5	-0.82
07/19/90	22:10	25.2	-0.61

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Table 2 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	22:20	25.0	-0.51
07/19/90	22:30	25.1	-0.43
07/19/90	22:40	25.1	-0.29
07/19/90	22:50	25.4	-0.19
07/19/90	23:00	25.5	-0.07
07/19/90	23:10	25.5	-0.01
07/19/90	23:20	25.5	+0.12
07/19/90	23:30	25.4	+0.25
07/19/90	23:40	25.5	+0.36
07/19/90	23:50	25.5	+0.47
07/20/90	00:00	25.5	+0.61
07/20/90	00:10	25.4	+0.65
07/20/90	00:20	25.3	+0.69
07/20/90	00:30	24.9	+0.80
07/20/90	00:40	24.8	+0.90
07/20/90	00:50	24.6	+0.98
07/20/90	01:00	24.2	+1.04
07/20/90	01:10	24.1	+1.01
07/20/90	01:20	25.1	+1.07
07/20/90	01:30	23.7	+1.12
07/20/90	01:40	25.5	+1.15
07/20/90	01:50	25.5	+1.27
07/20/90	02:00	25.5	+1.32
07/20/90	02:10	23.3	+1.35
07/20/90	02:20	23.1	+1.44
07/20/90	02:30	23.2	+1.51
07/20/90	02:40	23.3	+1.58
07/20/90	02:50	23.6	+1.65
07/20/90	03:00	23.6	+1.66
07/20/90	03:10	23.6	+1.65
07/20/90	03:20	23.6	+1.67
07/20/90	03:30	23.6	+1.64
07/20/90	03:40	23.8	+1.64

(Sheet 6 of 10)

Table 2 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	03:50	23.9	+1.61
07/20/90	04:00	23.9	+1.57
07/20/90	04:10	23.9	+1.56
07/20/90	04:20	24.0	+1.56
07/20/90	04:30	23.9	+1.54
07/20/90	04:40	23.9	+1.48
07/20/90	04:50	23.9	+1.45
07/20/90	05:00	23.9	+1.43
07/20/90	05:10	23.9	+1.39
07/20/90	05:20	23.8	+1.39
07/20/90	05:30	23.8	+1.31
07/20/90	05:40	23.8	+1.29
07/20/90	05:50	23.8	+1.26
07/20/90	06:00	23.8	+1.24
07/20/90	06:10	23.8	+1.16
07/20/90	06:20	23.8	+1.14
07/20/90	06:30	23.8	+1.05
07/20/90	06:40	23.8	+0.98
07/20/90	06:50	23.9	+0.95
07/20/90	07:00	23.9	+0.89
07/20/90	07:10	23.8	+0.87
07/20/90	07:20	23.9	+0.84
07/20/90	07:30	23.9	+0.80
07/20/90	07:40	23.9	+0.76
07/20/90	07:50	23.9	+0.67
07/20/90	08:00	24.0	+0.67
07/20/90	08:10	24.1	+0.66
07/20/90	08:20	24.1	+0.67
07/20/90	08:30	24.1	+0.67
07/20/90	08:40	24.1	+0.64
07/20/90	08:50	24.0	+0.61
07/20/90	09:00	24.1	+0.65
07/20/90	09:10	24.2	+0.69

Table 2 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	09:20	24.1	+0.69
07/20/90	09:30	24.1	+0.75
07/20/90	09:40	24.0	+0.79
07/20/90	09:50	24.1	+0.78
07/20/90	10:00	24.0	+0.75
07/20/90	10:10	24.0	+0.73
07/20/90	10:20	24.0	+0.74
07/20/90	10:40	24.0	+0.77
07/20/90	10:50	24.1	+0.77
07/20/90	11:00	24.3	+0.75
07/20/90	11:10	24.3	+0.79
07/20/90	11:20	24.4	+0.75
07/20/90	11:30	24.5	+0.71
07/20/90	11:40	24.4	+0.71
07/20/90	11:50	24.5	+0.70
07/20/90	12:00	24.5	+0.73
07/20/90	12:10	24.6	+0.78
07/20/90	12:20	24.8	+0.76
07/20/90	12:30	24.8	+0.71
07/20/90	12:40	24.6	+0.70
07/20/90	12:50	24.5	+0.67
07/20/90	13:00	24.5	+0.58
07/20/90	13:10	24.6	+0.58
07/20/90	13:20	24.6	+0.54
07/20/90	13:30	24.5	+0.50
07/20/90	13:40	24.7	+0.44
07/20/90	13:50	24.6	+0.35
07/20/90	14:00	24.7	+0.31
07/20/90	14:10	24.7	+0.23
07/20/90	14:20	24.7	+0.17
07/20/90	14:30	24.7	+0.12
07/20/90	14:40	24.7	-0.01
07/20/90	14:50	24.6	-0.14

Table 2 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	15:00	24.6	-0.16
07/20/90	15:10	24.6	-0.26
07/20/90	15:20	24.5	-0.33
07/20/90	15:30	24.5	-0.40
07/20/90	15:40	24.5	-0.41
07/20/90	15:50	24.5	-0.50
07/20/90	16:00	24.5	-0.57
07/20/90	16:10	24.5	-0.67
07/20/90	16:20	24.4	-0.78
07/20/90	16:30	24.5	-0.88
07/20/90	16:40	24.4	-0.98
07/20/90	16:50	24.3	-1.15
07/20/90	17:00	24.3	-1.23
07/20/90	17:10	24.2	-1.27
07/20/90	17:20	24.1	-1.39
07/20/90	17:30	24.1	-1.46
07/20/90	17:40	24.1	-1.47
07/20/90	17:50	24.1	-1.62
07/20/90	18:00	24.1	-1.69
07/20/90	18:10	24.1	-1.74
07/20/90	18:20	24.1	-1.77
07/20/90	18:30	24.1	-1.83
07/20/90	18:40	24.1	-1.85
07/20/90	18:50	24.1	-1.88
07/20/90	19:00	24.1	-1.86
07/20/90	19:10	24.1	-1.82
07/20/90	19:20	24.0	-1.89
07/20/90	19:30	24.0	-1.89
07/20/90	19:40	23.9	-1.84
07/20/90	19:50	23.9	-1.77
07/20/90	20:00	23.9	-1.78
07/20/90	20:10	23.8	-1.77
07/20/90	20:20	23.8	-1.76

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Table 2 (Concluded)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	20:30	23.7	-1.71
07/20/90	20:40	23.8	-1.67
07/20/90	20:50	23.5	-1.63
07/20/90	21:00	23.5	-1.57
07/20/90	21:10	23.8	-1.58
07/20/90	21:20	23.6	-1.56
07/20/90	21:30	23.5	-1.55
07/20/90	21:40	23.1	-1.49
07/20/90	21:50	22.9	-1.42
07/20/90	22:00	23.0	-1.40
07/20/90	22:10	22.9	-1.28
07/20/90	22:20	22.9	-1.16
07/20/90	22:30	22.8	-1.06
07/20/90	22:40	22.6	-0.94
07/20/90	22:50	22.6	-0.83
07/20/90	23:00	22.6	-0.79
07/20/90	23:10	22.9	-0.68
07/20/90	23:20	22.3	-0.58
07/20/90	23:30	22.2	-0.47
07/20/90	23:40	22.7	-0.40
07/20/90	23:50	22.7	-0.34

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Table 3
Water-Surface Elevations for Station S3.0

Date MM/DD/YY	Time HH:MM	Elevation ft
07/18/90	19:00	-0.40
07/18/90	19:10	-0.40
07/18/90	19:20	-0.39
07/18/90	19:30	-0.43
07/18/90	19:40	-0.46
07/18/90	19:50	-0.42
07/18/90	20:00	-0.47
07/18/90	20:10	-0.46
07/18/90	20:20	-0.72
07/18/90	20:30	-0.46
07/18/90	20:40	-0.48
07/18/90	20:50	-0.44
07/18/90	21:00	-0.47
07/18/90	21:10	-0.47
07/18/90	21:20	-0.48
07/18/90	21:30	-0.42
07/18/90	21:40	-0.44
07/18/90	21:50	-0.41
07/18/90	22:00	-0.40
07/18/90	22:10	-0.44
07/18/90	22:20	-0.37
07/18/90	22:30	-0.33
07/18/90	22:40	-0.28
07/18/90	22:50	-0.23
07/18/90	23:00	-0.22
07/18/90	23:10	-0.27
07/18/90	23:20	-0.23
07/18/90	23:30	-0.14
07/18/90	23:40	-0.10
07/18/90	23:50	-0.08
07/19/90	00:00	-0.03
07/19/90	00:10	-0.04

(Sheet 1 of 10)

Table 3 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	00:20	-0.04
07/19/90	00:30	-0.04
07/19/90	00:40	-0.01
07/19/90	00:50	+0.03
07/19/90	01:00	+0.05
07/19/90	01:10	+0.13
07/19/90	01:20	+0.09
07/19/90	01:30	+0.05
07/19/90	01:40	+0.06
07/19/90	01:50	+0.09
07/19/90	02:00	+0.18
07/19/90	02:10	+0.13
07/19/90	02:20	+0.20
07/19/90	02:30	+0.20
07/19/90	02:40	+0.43
07/19/90	02:50	+0.26
07/19/90	03:00	+0.29
07/19/90	03:10	+0.19
07/19/90	03:20	+0.28
07/19/90	03:30	+0.29
07/19/90	03:40	+0.30
07/19/90	03:50	+0.34
07/19/90	04:00	+0.33
07/19/90	04:10	+0.39
07/19/90	04:20	+0.39
07/19/90	04:30	+0.44
07/19/90	04:40	+0.44
07/19/90	04:50	+0.43
07/19/90	05:00	+0.47
07/19/90	05:10	+0.51
07/19/90	05:20	+0.52
07/19/90	05:30	+0.56
07/19/90	05:40	+0.57

Table 3 (Continued)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	05:50	+0.58
07/19/90	06:00	+0.57
07/19/90	06:10	+0.61
07/19/90	06:20	+0.63
07/19/90	06:30	+0.68
07/19/90	06:40	+0.69
07/19/90	06:50	+0.68
07/19/90	07:00	+0.68
07/19/90	07:10	+0.73
07/19/90	07:20	+0.71
07/19/90	07:30	+0.72
07/19/90	07:40	+0.72
07/19/90	07:50	+0.74
07/19/90	08:00	+0.74
07/19/90	08:10	+0.76
07/19/90	08:20	+0.78
07/19/90	08:30	+0.78
07/19/90	08:40	+0.68
07/19/90	08:50	+0.72
07/19/90	09:00	+0.74
07/19/90	09:10	+0.74
07/19/90	09:20	+0.72
07/19/90	09:30	+0.73
07/19/90	09:40	+0.75
07/19/90	09:50	+0.65
07/19/90	10:00	+0.65
07/19/90	10:10	+0.66
07/19/90	10:20	+0.70
07/19/90	10:30	+0.71
07/19/90	10:40	+0.76
07/19/90	10:50	+0.76
07/19/90	11:00	+0.75
07/19/90	11:10	+0.71

(Sheet 3 of 10)

Table 3 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	11:20	+0.69
07/19/90	11:30	+0.71
07/19/90	11:40	+0.74
07/19/90	11:50	+0.77
07/19/90	12:00	+0.75
07/19/90	12:10	+0.71
07/19/90	12:20	+0.73
07/19/90	12:30	+0.71
07/19/90	12:40	+0.73
07/19/90	12:50	+0.68
07/19/90	13:00	+0.65
07/19/90	13:10	+0.63
07/19/90	13:20	+0.63
07/19/90	13:30	+0.62
07/19/90	13:40	+0.59
07/19/90	13:50	+0.54
07/19/90	14:00	+0.46
07/19/90	14:10	+0.47
07/19/90	14:20	+0.44
07/19/90	14:30	+0.35
07/19/90	14:40	+0.33
07/19/90	14:50	+0.33
07/19/90	15:00	+0.26
07/19/90	15:10	+0.32
07/19/90	15:20	+0.22
07/19/90	15:30	+0.12
07/19/90	15:40	+0.10
07/19/90	15:50	+0.09
07/19/90	16:00	+0.07
07/19/90	16:10	-0.69
07/19/90	16:20	-0.09
07/19/90	16:30	-0.05
07/19/90	16:40	-0.10

Table 3 (Continued)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	16:50	-0.14
07/19/90	17:00	-0.13
07/19/90	17:10	-0.15
07/19/90	17:20	-0.16
[illegible]	17:30	-0.20
[illegible]/90	17:40	-0.21
07/19/90	17:50	-0.28
07/19/90	18:00	-0.28
07/19/90	18:10	-0.27
07/19/90	18:20	-0.29
07/19/90	18:30	-0.37
07/19/90	18:40	-0.42
07/19/90	18:50	-0.55
07/19/90	19:00	-0.52
07/19/90	19:10	-0.45
07/19/90	19:20	-0.59
07/19/90	19:30	-0.57
07/19/90	19:40	-0.64
07/19/90	19:50	-0.65
07/19/90	20:00	-0.65
07/19/90	20:10	-0.78
07/19/90	20:20	-0.67
07/19/90	20:30	-0.74
07/19/90	20:40	-0.68
07/19/90	20:50	-0.74
07/19/90	21:00	-0.65
07/19/90	21:10	-0.72
07/19/90	21:20	-0.68
07/19/90	21:30	-0.69
07/19/90	21:40	-0.71
07/19/90	21:50	-0.72
07/19/90	22:00	-0.70
07/19/90	22:10	-0.70

Table 3 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	22:20	-0.69
07/19/90	22:30	-0.64
07/19/90	22:40	-0.57
07/19/90	22:50	-0.55
07/19/90	23:00	-0.51
07/19/90	23:10	-0.50
07/19/90	23:20	-0.46
07/19/90	23:30	-0.39
07/19/90	23:40	-0.34
07/19/90	23:50	-0.28
07/20/90	00:00	-0.24
07/20/90	00:10	-0.22
07/20/90	00:20	-0.18
07/20/90	00:30	-0.14
07/20/90	00:40	-0.19
07/20/90	00:50	-0.15
07/20/90	01:00	-0.09
07/20/90	01:10	-0.09
07/20/90	01:20	-0.07
07/20/90	01:30	-0.07
07/20/90	01:40	-0.07
07/20/90	01:50	-0.05
07/20/90	02:00	-0.04
07/20/90	02:10	-0.01
07/20/90	02:20	+0.00
07/20/90	02:30	-0.02
07/20/90	02:40	+0.05
07/20/90	02:50	+0.09
07/20/90	03:00	+0.13
07/20/90	03:10	+0.15
07/20/90	03:20	+0.13
07/20/90	03:30	+0.15
07/20/90	03:40	+0.20
		(Sheet 6 of 10)

Table 3 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	03:50	+0.18
07/20/90	04:00	+0.21
07/20/90	04:10	+0.24
07/20/90	04:20	+0.30
07/20/90	04:30	+0.28
07/20/90	04:40	+0.34
07/20/90	04:50	+0.43
07/20/90	05:00	+0.34
07/20/90	05:10	+0.37
07/20/90	05:20	+0.38
07/20/90	05:30	+0.43
07/20/90	05:40	+0.45
07/20/90	05:50	+0.45
07/20/90	06:00	+0.49
07/20/90	06:10	+0.49
07/20/90	06:20	+0.49
07/20/90	06:30	+0.49
07/20/90	06:40	+0.51
07/20/90	06:50	+0.50
07/20/90	07:00	+0.50
07/20/90	07:10	+0.52
07/20/90	07:20	+0.55
07/20/90	07:30	+0.51
07/20/90	07:40	+0.51
07/20/90	07:50	+0.52
07/20/90	08:00	+0.49
07/20/90	08:10	+0.51
07/20/90	08:20	+0.51
07/20/90	08:30	+0.54
07/20/90	08:40	+0.53
07/20/90	08:50	+0.56
07/20/90	09:00	+0.57
07/20/90	09:10	+0.57
		(Sheet 7 of 10)

Table 3 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	09:20	+0.58
07/20/90	09:30	+0.63
07/20/90	09:40	+0.68
07/20/90	09:50	+0.66
07/20/90	10:00	+0.68
07/20/90	10:10	+0.73
07/20/90	10:20	+0.71
07/20/90	10:30	+0.71
07/20/90	10:40	+0.73
07/20/90	10:50	+0.77
07/20/90	11:00	+0.75
07/20/90	11:10	+0.76
07/20/90	11:20	+0.75
07/20/90	11:30	+0.75
07/20/90	11:40	+0.76
07/20/90	11:50	+0.77
07/20/90	12:00	+0.75
07/20/90	12:10	+0.70
07/20/90	12:20	+0.73
07/20/90	12:30	+0.76
07/20/90	12:40	+0.69
07/20/90	12:50	+0.72
07/20/90	13:00	+0.71
07/20/90	13:10	+0.69
07/20/90	13:20	+0.69
07/20/90	13:30	+0.67
07/20/90	13:40	+0.64
07/20/90	13:50	+0.63
07/20/90	14:00	+0.61
07/20/90	14:10	+0.58
07/20/90	14:20	+0.53
07/20/90	14:30	+0.51
07/20/90	14:40	+0.49

Table 3 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	14:50	+0.46
07/20/90	15:00	+0.44
07/20/90	15:10	+0.39
07/20/90	15:20	+0.15
07/20/90	15:30	+0.26
07/20/90	15:40	+0.28
07/20/90	15:50	+0.15
07/20/90	16:00	+0.11
07/20/90	16:10	+0.18
07/20/90	16:20	-0.34
07/20/90	16:30	+0.04
07/20/90	16:40	+0.02
07/20/90	16:50	-0.01
07/20/90	17:00	-0.10
07/20/90	17:10	-0.10
07/20/90	17:20	-0.15
07/20/90	17:30	-0.20
07/20/90	17:40	-0.19
07/20/90	17:50	-0.25
07/20/90	18:00	-0.26
07/20/90	18:10	-0.38
07/20/90	18:20	-0.36
07/20/90	18:30	-0.37
07/20/90	18:40	-0.40
07/20/90	18:50	-0.43
07/20/90	19:00	-0.47
07/20/90	19:10	-0.52
07/20/90	19:20	-0.55
07/20/90	19:30	-0.59
07/20/90	19:40	-0.78
07/20/90	19:50	-0.68
07/20/90	20:00	-0.70
07/20/90	20:10	-0.75

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Table 3 (Concluded)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	20:20	-0.77
07/20/90	20:30	-0.81
07/20/90	20:40	-0.81
07/20/90	20:50	-0.85
07/20/90	21:00	-0.81
07/20/90	21:10	-0.84
07/20/90	21:20	-0.89
07/20/90	21:30	-0.88
07/20/90	21:40	-0.90
07/20/90	21:50	-0.91
07/20/90	22:00	-0.96
07/20/90	22:10	-0.96
07/20/90	22:20	-0.87
07/20/90	22:30	-0.87
07/20/90	22:40	-0.83
07/20/90	22:50	-0.82
07/20/90	23:00	-0.77
07/20/90	23:10	-0.73
07/20/90	23:20	-0.72
07/20/90	23:30	-0.70
07/20/90	23:40	-0.68
07/20/90	23:50	-0.69

(Sheet 10 of 10)

Table 4
Water-Surface Elevations for Station S7.0

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/18/90	19:00	11.2	-0.33
07/18/90	19:10	11.5	-0.38
07/18/90	19:20	11.6	-0.42
07/18/90	19:30	11.6	-0.45
07/18/90	19:40	11.7	-0.48
07/18/90	19:50	11.9	-0.50
07/18/90	20:00	11.8	-0.55
07/18/90	20:10	12.2	-0.58
07/18/90	20:20	12.6	-0.57
07/18/90	20:30	12.2	-0.61
07/18/90	20:40	12.9	-0.61
07/18/90	20:50	13.3	-0.63
07/18/90	21:00	13.2	-0.63
07/18/90	21:10	12.9	-0.63
07/18/90	21:20	13.3	-0.67
07/18/90	21:30	13.2	-0.68
07/18/90	21:40	13.5	-0.68
07/18/90	21:50	13.6	-0.71
07/18/90	22:00	13.9	-0.68
07/18/90	22:10	13.8	-0.71
07/18/90	22:20	13.8	-0.72
07/18/90	22:30	13.8	-0.72
07/18/90	22:40	13.8	-0.71
07/18/90	22:50	13.7	-0.75
07/18/90	23:00	13.8	-0.73
07/18/90	23:10	13.8	-0.71
07/18/90	23:20	13.9	-0.73
07/18/90	23:30	13.8	-0.70
07/18/90	23:40	13.8	-0.64
07/18/90	23:50	13.8	-0.65
07/19/90	00:00	13.5	-0.60
07/19/90	00:10	13.2	-0.54

(Sheet 1 of 10)

Table 4 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	00:20	13.2	-0.49
07/19/90	00:30	12.9	-0.47
07/19/90	00:40	12.2	-0.39
07/19/90	00:50	12.1	-0.35
07/19/90	01:00	11.9	-0.27
07/19/90	01:10	11.5	-0.22
07/19/90	01:20	11.0	-0.15
07/19/90	01:30	10.8	-0.11
07/19/90	01:40	10.0	-0.05
07/19/90	01:50	9.5	+0.02
07/19/90	02:00	8.7	+0.07
07/19/90	02:10	8.6	+0.12
07/19/90	02:20	8.3	+0.16
07/19/90	02:30	7.6	+0.24
07/19/90	02:40	7.3	+0.28
07/19/90	02:50	7.4	+0.32
07/19/90	03:00	7.5	+0.33
07/19/90	03:10	7.3	+0.39
07/19/90	03:20	7.3	+0.41
07/19/90	03:30	7.8	+0.43
07/19/90	03:40	7.4	+0.45
07/19/90	03:50	9.9	+0.47
07/19/90	04:00	10.5	+0.47
07/19/90	04:10	10.2	+0.45
07/19/90	04:20	10.1	+0.49
07/19/90	04:30	9.7	+0.48
07/19/90	04:40	9.2	+0.49
07/19/90	04:50	7.2	+0.53
07/19/90	05:00	8.6	+0.50
07/19/90	05:10	7.8	+0.51
07/19/90	05:20	7.0	+0.55
07/19/90	05:30	7.0	+0.54
07/19/90	05:40	7.0	+0.56

Table 4 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	05:50	7.0	+0.56
07/19/90	06:00	7.0	+0.54
07/19/90	06:10	7.0	+0.60
07/19/90	06:20	7.0	+0.59
07/19/90	06:30	7.0	+0.59
07/19/90	06:40	7.0	+0.61
07/19/90	06:50	7.0	+0.62
07/19/90	07:00	7.0	+0.62
07/19/90	07:10	7.0	+0.65
07/19/90	07:20	7.1	+0.65
07/19/90	07:30	7.1	+0.67
07/19/90	07:40	7.2	+0.65
07/19/90	07:50	7.2	+0.66
07/19/90	08:00	7.2	+0.69
07/19/90	08:10	7.2	+0.71
07/19/90	08:20	7.3	+0.70
07/19/90	08:30	7.3	+0.73
07/19/90	08:40	7.3	+0.73
07/19/90	08:50	7.2	+0.75
07/19/90	09:00	7.2	+0.75
07/19/90	09:10	7.2	+0.77
07/19/90	09:20	7.2	+0.75
07/19/90	09:30	7.2	+0.81
07/19/90	09:40	7.2	+0.80
07/19/90	09:50	7.2	+0.77
07/19/90	10:00	7.2	+0.79
07/19/90	10:10	7.2	+0.78
07/19/90	10:20	7.2	+0.78
07/19/90	10:30	7.2	+0.80
07/19/90	10:40	7.2	+0.81
07/19/90	10:50	7.3	+0.77
07/19/90	11:00	7.4	+0.78
07/19/90	11:10	7.4	+0.78

Table 4 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	11:20	7.4	+0.79
07/19/90	11:30	7.3	+0.73
07/19/90	11:40	7.3	+0.73
07/19/90	11:50	7.3	+0.75
07/19/90	12:00	7.4	+0.73
07/19/90	12:10	7.4	+0.72
07/19/90	12:20	8.1	+0.71
07/19/90	12:30	7.7	+0.76
07/19/90	12:40	7.9	+0.74
07/19/90	12:50	8.0	+0.72
07/19/90	13:00	7.9	+0.69
07/19/90	13:10	7.7	+0.70
07/19/90	13:20	7.7	+0.70
07/19/90	13:30	8.2	+0.66
07/19/90	13:40	7.8	+0.66
07/19/90	13:50	7.9	+0.67
07/19/90	14:00	7.9	+0.67
07/19/90	14:10	7.8	+0.63
07/19/90	14:20	7.8	+0.64
07/19/90	14:30	7.9	+0.61
07/19/90	14:40	9.2	+0.59
07/19/90	14:50	9.5	+0.58
07/19/90	15:00	9.5	+0.54
07/19/90	15:10	9.1	+0.52
07/19/90	15:20	8.8	+0.49
07/19/90	15:30	8.2	+0.45
07/19/90	15:40	8.2	+0.43
07/19/90	15:50	8.4	+0.[illegible]1
07/19/90	16:00	8.4	+0.39
07/19/90	16:10	8.6	+0.32
07/19/90	16:20	9.4	+0.27
07/19/90	16:30	9.4	+0.23
07/19/90	16:40	10.0	+0.23

Table 4 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	16:50	10.3	+0.18
07/19/90	17:00	10.1	+0.12
07/19/90	17:10	10.7	+0.08
07/19/90	17:20	10.4	+0.04
07/19/90	17:30	10.5	-0.00
07/19/90	17:40	10.4	-0.06
07/19/90	17:50	10.5	-0.07
07/19/90	18:00	10.8	-0.12
07/19/90	18:10	11.0	-0.19
07/19/90	18:20	11.2	-0.23
07/19/90	18:30	11.2	-0.22
07/19/90	18:40	11.2	-0.27
07/19/90	18:50	11.7	-0.29
07/19/90	19:00	11.7	-0.35
07/19/90	19:10	11.0	-0.37
07/19/90	19:20	11.6	-0.41
07/19/90	19:30	11.7	-0.42
07/19/90	19:40	11.5	-0.45
07/19/90	19:50	11.7	-0.48
07/19/90	20:00	11.5	-0.50
07/19/90	20:10	11.3	-0.51
07/19/90	20:20	11.8	-0.54
07/19/90	20:30	11.7	-0.59
07/19/90	20:40	11.8	-0.61
07/19/90	20:50	11.2	-0.66
07/19/90	21:00	11.5	-0.66
07/19/90	21:10	11.5	-0.72
07/19/90	21:20	11.8	-0.74
07/19/90	21:30	11.7	-0.73
07/19/90	21:40	11.8	-0.79
07/19/90	21:50	11.8	-0.83
07/19/90	22:00	11.7	-0.86
07/19/90	22:10	11.7	-0.86

(Sheet 5 of 10)

Table 4 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	22:20	11.9	-0.90
07/19/90	22:30	11.9	-0.88
07/19/90	22:40	12.1	-0.90
07/19/90	22:50	11.9	-0.93
07/19/90	23:00	12.0	-0.96
07/19/90	23:10	12.1	-0.94
07/19/90	23:20	12.3	-0.97
07/19/90	23:30	12.4	-0.98
07/19/90	23:40	12.1	-0.97
07/19/90	23:50	12.2	-1.00
07/20/90	00:00	12.2	-0.97
07/20/90	00:10	12.3	-0.98
07/20/90	00:20	12.3	-0.93
07/20/90	00:30	12.3	-0.87
07/20/90	00:40	12.3	-0.85
07/20/90	00:50	12.0	-0.80
07/20/90	01:00	11.9	-0.76
07/20/90	01:10	11.5	-0.68
07/20/90	01:20	11.5	-0.61
07/20/90	01:30	11.4	-0.56
07/20/90	01:40	11.2	-0.48
07/20/90	01:50	11.1	-0.40
07/20/90	02:00	11.0	-0.34
07/20/90	02:10	11.2	-0.28
07/20/90	02:20	11.3	-0.20
07/20/90	02:30	11.2	-0.15
07/20/90	02:40	11.1	-0.08
07/20/90	02:50	10.9	-0.02
07/20/90	03:00	10.8	+0.02
07/20/90	03:10	10.8	+0.06
07/20/90	03:20	10.7	+0.10
07/20/90	03:30	10.6	+0.14
07/20/90	03:40	10.5	+0.17

Table 4 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	03:50	10.4	+0.21
07/20/90	04:00	10.4	+0.20
07/20/90	04:10	10.4	+0.24
07/20/90	04:20	10.4	+0.27
07/20/90	04:30	10.4	+0.29
07/20/90	04:40	10.4	+0.31
07/20/90	04:50	10.4	+0.31
07/20/90	05:00	10.4	+0.33
07/20/90	05:10	10.3	+0.36
07/20/90	05:20	10.2	+0.39
07/20/90	05:30	10.1	+0.38
07/20/90	05:40	9.8	+0.41
07/20/90	05:50	9.7	+0.43
07/20/90	06:00	9.7	+0.42
07/20/90	06:10	9.7	+0.46
07/20/90	06:20	9.6	+0.46
07/20/90	06:30	9.5	+0.48
07/20/90	06:40	9.5	+0.47
07/20/90	06:50	9.5	+0.50
07/20/90	07:00	9.4	+0.49
07/20/90	07:10	9.3	+0.53
07/20/90	07:20	9.2	+0.53
07/20/90	07:30	9.2	+0.55
07/20/90	07:40	9.2	+0.55
07/20/90	07:50	9.1	+0.61
07/20/90	08:00	9.1	+0.60
07/20/90	08:10	9.1	+0.61
07/20/90	08:20	9.2	+0.63
07/20/90	08:30	9.1	+0.64
07/20/90	08:40	9.1	+0.63
07/20/90	08:50	9.1	+0.62
07/20/90	09:00	9.0	+0.63
07/20/90	09:10	9.0	+0.64

Table 4 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	09:20	9.3	+0.61
07/20/90	09:30	9.2	+0.64
07/20/90	09:40	9.2	+0.64
07/20/90	09:50	9.8	+0.63
07/20/90	10:00	10.0	+0.61
07/20/90	10:10	10.1	+0.63
07/20/90	10:20	10.0	+0.69
07/20/90	10:30	10.0	+0.65
07/20/90	10:40	9.7	+0.64
07/20/90	10:50	9.7	+0.68
07/20/90	11:00	9.6	+0.68
07/20/90	11:10	9.4	+0.69
07/20/90	11:20	9.5	+0.71
07/20/90	11:30	9.6	+0.73
07/20/90	11:40	9.7	+0.75
07/20/90	11:50	9.7	+0.76
07/20/90	12:00	9.6	+0.76
07/20/90	12:10	9.6	+0.74
07/20/90	12:20	9.7	+0.77
07/20/90	12:30	9.6	+0.74
07/20/90	12:40	9.1	+0.75
07/20/90	12:50	9.5	+0.75
07/20/90	13:00	9.5	+0.77
07/20/90	13:10	9.6	+0.77
07/20/90	13:20	9.5	+0.76
07/20/90	13:30	9.3	+0.76
07/20/90	13:40	9.8	+0.75
07/20/90	13:50	9.6	+0.71
07/20/90	14:00	9.6	+0.70
07/20/90	14:10	9.4	+0.69
07/20/90	14:20	9.4	+0.69
07/20/90	14:30	9.5	+0.70
07/20/90	14:40	9.8	+0.68

Table 4 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	14:50	9.8	+0.66
07/20/90	15:00	9.8	+0.63
07/20/90	15:10	9.7	+0.65
07/20/90	15:20	9.9	+0.63
07/20/90	15:30	9.7	+0.63
07/20/90	15:40	9.9	+0.59
07/20/90	15:50	10.0	+0.57
07/20/90	16:00	10.3	+0.51
07/20/90	16:10	10.2	+0.46
07/20/90	16:20	10.0	+0.44
07/20/90	16:30	10.2	+0.39
07/20/90	16:40	10.5	+0.34
07/20/90	16:50	10.8	+0.34
07/20/90	17:00	10.8	+0.30
07/20/90	17:10	10.8	+0.25
07/20/90	17:20	11.0	+0.22
07/20/90	17:30	10.9	+0.18
07/20/90	17:40	10.9	+0.13
07/20/90	17:50	11.2	+0.10
07/20/90	18:00	11.0	+0.09
07/20/90	18:10	11.1	+0.00
07/20/90	18:20	11.2	+0.00
07/20/90	18:30	11.2	-0.05
07/20/90	18:40	11.1	-0.09
07/20/90	18:50	11.1	-0.12
07/20/90	19:00	11.1	-0.14
07/20/90	19:10	10.9	-0.21
07/20/90	19:20	11.1	-0.21
07/20/90	19:30	11.0	-0.23
07/20/90	19:40	11.1	-0.27
07/20/90	19:50	11.3	-0.30
07/20/90	20:00	11.2	-0.33
07/20/90	20:10	11.0	-0.37

Table 4 (Concluded)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	20:20	11.1	-0.40
07/20/90	20:30	11.4	-0.42
07/20/90	20:40	11.3	-0.44
07/20/90	20:50	11.3	-0.50
07/20/90	21:00	11.6	-0.52
07/20/90	21:10	11.5	-0.57
07/20/90	21:20	11.3	-0.59
07/20/90	21:30	11.6	-0.62
07/20/90	21:40	11.6	-0.65
07/20/90	21:50	12.0	-0.68
07/20/90	22:00	12.0	-0.70
07/20/90	22:10	12.0	-0.73
07/20/90	22:20	12.0	-0.76
07/20/90	22:30	11.7	-0.80
07/20/90	22:40	11.8	-0.82
07/20/90	22:50	12.0	-0.83
07/20/90	23:00	12.2	-0.85
07/20/90	23:10	11.9	-0.88
07/20/90	23:20	11.9	-0.89
07/20/90	23:30	12.0	-0.90
07/2[illegible]	23:40	11.8	-0.90
07/20/90	23:50	11.5	-0.94

(Sheet 10 of 10)

Table 5
Water-Surface Elevations for Station S10.0

Date MM/DD/YY	Time HH:MM	Elevation ft
07/18/90	19:00	-0.30
07/18/90	19:10	-0.34
07/18/90	19:20	-0.36
07/18/90	19:30	-0.38
07/18/90	19:40	-0.40
07/18/90	19:50	-0.46
07/18/90	20:00	-0.46
07/18/90	20:10	-0.48
07/18/90	20:20	-0.51
07/18/90	20:30	-0.54
07/18/90	20:40	-0.57
07/18/90	20:50	-0.54
07/18/90	21:00	-0.63
07/18/90	21:10	-0.65
07/18/90	21:20	-0.65
07/18/90	21:30	-0.66
07/18/90	21:40	-0.66
07/18/90	21:50	-0.66
07/18/90	22:00	-0.67
07/18/90	22:10	-0.66
07/18/90	22:20	-0.68
07/18/90	22:30	-0.67
07/18/90	22:40	-0.66
07/18/90	22:50	-0.63
07/18/90	23:00	-0.61
07/18/90	23:10	-0.59
07/18/90	23:20	-0.53
07/18/90	23:30	-0.53
07/18/90	23:40	-0.50
07/18/90	23:50	-0.48
07/19/90	00:00	-0.45
07/19/90	00:10	-0.41

Table 5 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	00:20	-0.39
07/19/90	00:30	-0.38
07/19/90	00:40	-0.36
07/19/90	00:50	-0.33
07/19/90	01:00	-0.30
07/19/90	01:10	-0.27
07/19/90	01:20	-0.26
07/19/90	01:30	-0.22
07/19/90	01:40	-0.19
07/19/90	01:50	-0.17
07/19/90	02:00	-0.15
07/19/90	02:10	-0.13
07/19/90	02:20	-0.08
07/19/90	02:30	-0.08
07/19/90	02:40	-0.05
07/19/90	02:50	-0.04
07/19/90	03:00	-0.00
07/19/90	03:10	+0.02
07/19/90	03:20	+0.05
07/19/90	03:30	+0.09
07/19/90	03:40	+0.11
07/19/90	03:50	+0.15
07/19/90	04:00	+0.18
07/19/90	04:10	+0.23
07/19/90	04:20	+0.27
07/19/90	04:30	+0.30
07/19/90	04:40	+0.32
07/19/90	04:50	+0.37
07/19/90	05:00	+0.39
07/19/90	05:10	+0.43
07/19/90	05:20	+0.44
07/19/90	05:30	+0.46
07/19/90	05:40	+0.50

Table 5 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	05:50	+0.52
07/19/90	06:00	+0.55
07/19/90	06:10	+0.57
07/19/90	06:20	+0.59
07/19/90	06:30	+0.62
07/19/90	06:40	+0.62
07/19/90	06:50	+0.65
07/19/90	07:00	+0.68
07/19/90	07:10	+0.69
07/19/90	07:20	+0.70
07/19/90	07:30	+0.72
07/19/90	07:40	+0.76
07/19/90	07:50	+0.70
07/19/90	08:00	+0.76
07/19/90	08:10	+0.76
07/19/90	08:20	+0.77
07/19/90	08:30	+0.78
07/19/90	08:40	+0.79
07/19/90	08:50	+0.77
07/19/90	09:00	+0.73
07/19/90	09:10	+0.76
07/19/90	09:20	+0.77
07/19/90	09:30	+0.78
07/19/90	09:40	+0.77
07/19/90	09:50	+0.77
07/19/90	10:00	+0.77
07/19/90	10:10	+0.75
07/19/90	10:20	+0.74
07/19/90	10:30	+0.72
07/19/90	10:40	+0.72
07/19/90	10:50	+0.71
07/19/90	11:00	+0.72
07/19/90	11:10	+0.72
		(Sheet 3 of 10)

Table 5 (Continued)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	11:20	+0.75
07/19/90	11:30	+0.73
07/19/90	11:40	+0.72
07/19/90	11:50	+0.70
07/19/90	12:00	+0.70
07/19/90	12:10	+0.72
07/19/90	12:20	+0.72
07/19/90	12:30	+0.72
07/19/90	12:40	+0.71
07/19/90	12:50	+0.70
07/19/90	13:00	+0.69
07/19/90	13:10	+0.67
07/19/90	13:20	+0.66
07/19/90	13:30	+0.63
07/19/90	13:40	+0.62
07/19/90	13:50	+0.60
07/19/90	14:00	+0.60
07/19/90	14:10	+0.58
07/19/90	14:20	+0.57
07/19/90	14:30	+0.50
07/19/90	14:40	+0.51
07/19/90	14:50	+0.48
07/19/90	15:00	+0.45
07/19/90	15:10	+0.42
07/19/90	15:20	+0.43
07/19/90	15:30	+0.32
07/19/90	15:40	+0.33
07/19/90	15:50	+0.30
07/19/90	16:00	+0.25
07/19/90	16:10	+0.22
07/19/90	16:20	+0.19
07/19/90	16:30	+0.15
07/19/90	16:40	+0.12

Table 5 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	16:50	+0.09
07/19/90	17:00	+0.06
07/19/90	17:10	+0.03
07/19/90	17:20	-0.01
07/19/90	17:30	-0.04
07/19/90	17:40	-0.06
07/19/90	17:50	-0.09
07/19/90	18:00	-0.12
07/19/90	18:10	-0.16
07/19/90	18:20	-0.20
07/19/90	18:30	-0.18
07/19/90	18:40	-0.29
07/19/90	18:50	-0.28
07/19/90	19:00	-0.31
07/19/90	19:10	-0.35
07/19/90	19:20	-0.40
07/19/90	19:30	-0.43
07/19/90	19:40	-0.45
07/19/90	19:50	-0.50
07/19/90	20:00	-0.53
07/19/90	20:10	-0.57
07/19/90	20:20	-0.63
07/19/90	20:30	-0.63
07/19/90	20:40	-0.66
07/19/90	20:50	-0.69
07/19/90	21:00	-0.74
07/19/90	21:10	-0.74
07/19/90	21:20	-0.78
07/19/90	21:30	-0.79
07/19/90	21:40	-0.81
07/19/90	21:50	-0.81
07/19/90	22:00	-0.87
07/19/90	22:10	-0.84
		(Sheet 5 of 10)

Table 5 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	22:20	-0.87
07/19/90	22:30	-0.86
07/19/90	22:40	-0.84
07/19/90	22:50	-0.84
07/19/90	23:00	-0.84
07/19/90	23:10	-0.82
07/19/90	23:20	-0.80
07/19/90	23:30	-0.82
07/19/90	23:40	-0.78
07/19/90	23:50	-0.76
07/20/90	00:00	-0.73
07/20/90	00:10	-0.69
07/20/90	00:20	-0.66
07/20/90	00:30	-0.86
07/20/90	00:40	-0.61
07/20/90	00:50	-0.57
07/20/90	01:00	-0.54
07/20/90	01:10	-0.50
07/20/90	01:20	-0.49
07/20/90	01:30	-0.46
07/20/90	01:40	-0.43
07/20/90	01:50	-0.40
07/20/90	02:00	-0.39
07/20/90	02:10	-0.37
07/20/90	02:20	-0.36
07/20/90	02:30	-0.33
07/20/90	02:40	-0.31
07/20/90	02:50	-0.28
07/20/90	03:00	-0.25
07/20/90	03:10	-0.22
07/20/90	03:20	-0.19
07/20/90	03:30	-0.21
07/20/90	03:40	-0.10

Table 5 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	03:50	-0.09
07/20/90	04:00	-0.05
07/20/90	04:10	-0.03
07/20/90	04:20	+0.02
07/20/90	04:30	+0.06
07/20/90	04:40	+0.09
07/20/90	04:50	+0.15
07/20/90	05:00	+0.18
07/20/90	05:10	+0.24
07/20/90	05:20	+0.25
07/20/90	05:30	+0.29
07/20/90	05:40	+0.33
07/20/90	05:50	+0.36
07/20/90	06:00	+0.39
07/20/90	06:10	+0.36
07/20/90	06:20	+0.40
07/20/90	06:30	+0.45
07/20/90	06:40	+0.40
07/20/90	06:50	+0.48
07/20/90	07:00	+0.46
07/20/90	07:10	+0.48
07/20/90	07:20	+0.52
07/20/90	07:30	+0.52
07/20/90	07:40	+0.52
07/20/90	07:50	+0.55
07/20/90	08:00	+0.53
07/20/90	08:10	+0.56
07/20/90	08:20	+0.56
07/20/90	08:30	+0.56
07/20/90	08:40	+0.57
07/20/90	08:50	+0.60
07/20/90	09:00	+0.60
07/20/90	09:10	+0.62

(Sheet 7 of 10)

Table 5 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	09:20	+0.63
07/20/90	09:30	+0.64
07/20/90	09:40	+0.66
07/20/90	09:50	+0.66
07/20/90	10:00	+0.70
07/20/90	10:10	+0.71
07/20/90	10:20	+0.71
07/20/90	10:30	+0.73
07/20/90	10:40	+0.72
07/20/90	10:50	+0.73
07/20/90	11:00	+0.72
07/20/90	11:10	+0.74
07/20/90	11:20	+0.74
07/20/90	11:30	+0.74
07/20/90	11:40	+0.73
07/20/90	11:50	+0.74
07/20/90	12:00	+0.74
07/20/90	12:10	+0.75
07/20/90	12:20	+0.73
07/20/90	12:30	+0.76
07/20/90	12:40	+0.71
07/20/90	12:50	+0.78
07/20/90	13:00	+0.76
07/20/90	13:10	+0.78
07/20/90	13:20	+0.78
07/20/90	13:30	+0.76
07/20/90	13:40	+0.76
07/20/90	13:50	+0.76
07/20/90	14:00	+0.74
07/20/90	14:10	+0.74
07/20/90	14:20	+0.73
07/20/90	14:30	+0.74
07/20/90	14:40	+0.61

Table 5 (Continued)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	14:50	+0.66
07/20/90	15:00	+0.62
07/20/90	15:10	+0.60
07/20/90	15:20	+0.59
07/20/90	15:30	+0.57
07/20/90	15:40	+0.49
07/20/90	15:50	+0.48
07/20/90	16:00	+0.49
07/20/90	16:10	+0.43
07/20/90	16:20	+0.39
07/20/90	16:30	+0.38
07/20/90	16:40	+0.38
07/20/90	16:50	+0.33
07/20/90	17:00	+0.30
07/20/90	17:10	+0.29
07/20/90	17:20	+0.27
07/20/90	17:30	+0.18
07/20/90	17:40	+0.18
07/20/90	17:50	+0.16
07/20/90	18:00	+0.11
07/20/90	18:10	+0.11
07/20/90	18:20	-0.02
07/20/90	18:30	-0.01
07/20/90	18:40	-0.04
07/20/90	18:50	-0.12
07/20/90	19:00	-0.14
07/20/90	19:10	-0.19
07/20/90	19:20	-0.22
07/20/90	19:30	-0.26
07/20/90	19:40	-0.30
07/20/90	19:50	-0.31
07/20/90	20:00	-0.37
07/20/90	20:10	-0.38

Table 5 (Concluded)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	20:20	-0.42
07/20/90	20:30	-0.44
07/20/90	20:40	-0.48
07/20/90	20:50	-0.54
07/20/90	21:00	-0.50
07/20/90	21:10	-0.62
07/20/90	21:20	-0.58
07/20/90	21:30	-0.64
07/20/90	21:40	-0.64
07/20/90	21:50	-0.66
07/20/90	22:00	-0.69
07/20/90	22:10	-0.71
07/20/90	22:20	-0.73
07/20/90	22:30	-0.76
07/20/90	22:40	-0.79
07/20/90	22:50	-0.81
07/20/90	23:00	-0.83
07/20/90	23:10	-0.83
07/20/90	23:20	-0.86
07/20/90	23:30	-0.86
07/20/90	23:40	-0.87
07/20/90	23:50	-0.87

(Sheet 10 of 10)

Table 6
Water-Surface Elevations for Station S14.0

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/18/90	19:00	5.3	-0.12
07/18/90	19:10	5.3	-0.17
07/18/90	19:20	5.2	-0.20
07/18/90	19:30	5.1	-0.25
07/18/90	19:40	5.1	-0.29
07/18/90	19:50	5.1	-0.30
07/18/90	20:00	5.1	-0.34
07/18/90	20:10	5.0	-0.36
07/18/90	20:20	5.1	-0.42
07/18/90	20:30	5.1	-0.44
07/18/90	20:40	5.1	-0.47
07/18/90	20:50	5.0	-0.49
07/18/90	21:00	5.0	-0.50
07/18/90	21:10	5.1	-0.58
07/18/90	21:20	5.0	-0.58
07/18/90	21:30	5.0	-0.58
07/18/90	21:40	5.0	-0.63
07/18/90	21:50	5.1	-0.66
07/18/90	22:00	5.0	-0.69
07/18/90	22:10	5.1	-0.72
07/18/90	22:20	5.0	-0.77
07/18/90	22:30	5.0	-0.73
07/18/90	22:40	4.9	-0.77
07/18/90	22:50	4.5	-0.77
07/18/90	23:00	4.1	-0.78
07/18/90	23:10	3.8	-0.81
07/18/90	23:20	3.6	-0.79
07/18/90	23:30	3.6	-0.81
07/18/90	23:40	3.5	-0.83
07/18/90	23:50	3.6	-0.85
07/19/90	00:00	3.4	-0.81
07/19/90	00:10	3.3	-0.79

(Sheet 1 of 10)

Table 6 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	00:20	3.3	-0.77
07/19/90	00:30	3.5	-0.76
07/19/90	00:40	3.8	-0.72
07/19/90	00:50	3.7	-0.70
07/19/90	01:00	3.8	-0.65
07/19/90	01:10	3.8	-0.62
07/19/90	01:20	4.0	-0.58
07/19/90	01:30	4.1	-0.55
07/19/90	01:40	4.2	-0.56
07/19/90	01:50	4.1	-0.44
07/19/90	02:00	4.2	-0.38
07/19/90	02:10	4.2	-0.34
07/19/90	02:20	4.2	-0.31
07/19/90	02:30	4.4	-0.23
07/19/90	02:40	4.4	-0.17
07/19/90	02:50	4.2	-0.11
07/19/90	03:00	4.1	-0.06
07/19/90	03:10	4.1	-0.03
07/19/90	03:20	4.3	+0.01
07/19/90	03:30	4.1	+0.06
07/19/90	03:40	4.2	+0.10
07/19/90	03:50	4.1	+0.12
07/19/90	04:00	4.4	+0.16
07/19/90	04:10	4.2	+0.09
07/19/90	04:20	4.8	+0.24
07/19/90	04:30	4.7	+0.30
07/19/90	04:40	4.6	+0.29
07/19/90	04:50	4.1	+0.35
07/19/90	05:00	3.9	+0.34
07/19/90	05:10	4.0	+0.41
07/19/90	05:20	3.9	+0.40
07/19/90	05:30	3.7	+0.43

(Sheet 2 of 10)

Table 6 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	05:40	4.3	+0.48
07/19/90	05:50	3.8	+0.46
07/19/90	06:00	4.4	+0.51
07/19/90	06:10	3.7	+0.54
07/19/90	06:20	3.9	+0.53
07/19/90	06:30	4.6	+0.55
07/19/90	06:40	4.4	+0.56
07/19/90	06:50	4.3	+0.60
07/19/90	07:00	4.2	+0.62
07/19/90	07:10	4.2	+0.64
07/19/90	07:20	4.3	+0.64
07/19/90	07:30	3.8	+0.67
07/19/90	07:40	3.7	+0.71
07/19/90	07:50	4.2	+0.69
07/19/90	08:00	4.0	+0.69
07/19/90	08:10	3.7	+0.72
07/19/90	08:20	4.0	+0.76
07/19/90	08:30	4.1	+0.73
07/19/90	08:40	4.0	+0.78
07/19/90	08:50	4.3	+0.80
07/19/90	09:00	4.3	+0.78
07/19/90	09:10	4.2	+0.83
07/19/90	09:20	4.4	+0.79
07/19/90	09:30	4.4	+0.81
07/19/90	09:40	4.5	+0.78
07/19/90	09:50	4.3	+0.81
07/19/90	10:00	4.4	+0.81
07/19/90	10:10	4.5	+0.79
07/19/90	10:20	4.4	+0.77
07/19/90	10:30	4.3	+0.78
07/19/90	10:40	4.5	+0.79
07/19/90	10:50	4.3	+0.76
07/19/90	11:00	4.4	+0.80

(Sheet 3 of 10)

Table 6 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	11:10	4.3	+0.77
07/19/90	11:20	4.4	+0.76
07/19/90	11:30	4.3	+0.76
07/19/90	11:40	4.3	+0.75
07/19/90	11:50	4.4	+0.74
07/19/90	12:00	4.4	+0.73
07/19/90	12:10	4.1	+0.72
07/19/90	12:20	4.2	+0.64
07/19/90	12:30	4.2	+0.70
07/19/90	12:40	4.2	+0.70
07/19/90	12:50	4.2	+0.69
07/19/90	13:00	4.1	+0.69
07/19/90	13:10	4.2	+0.64
07/19/90	13:20	4.2	+0.65
07/19/90	13:30	4.1	+0.65
07/19/90	13:40	4.2	+0.66
07/19/90	13:50	4.1	+0.64
07/19/90	14:00	4.1	+0.63
07/19/90	14:10	4.2	+0.62
07/19/90	14:20	4.2	+0.63
07/19/90	14:30	4.3	+0.63
07/19/90	14:40	4.3	+0.63
07/19/90	14:50	4.3	+0.57
07/19/90	15:00	4.2	+0.60
07/19/90	15:10	4.2	+0.60
07/19/90	15:20	4.0	+0.60
07/19/90	15:30	4.0	+0.61
07/19/90	15:40	3.9	+0.55
07/19/90	15:50	4.0	+0.54
07/19/90	16:00	4.2	+0.53
07/19/90	16:10	4.2	+0.49
07/19/90	16:20	4.3	
07/19/90	16:30	4.3	

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Table 6 (Continued)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	16:40	4.4	+0.38
07/19/90	16:50	4.4	+0.41
07/19/90	17:00	4.4	+0.36
07/19/90	17:10	4.2	+0.29
07/19/90	17:20	4.4	+0.26
07/19/90	17:30	4.2	+0.23
07/19/90	17:40	4.0	+0.21
07/19/90	17:50	4.0	+0.16
07/19/90	18:00	3.9	+0.14
07/19/90	18:10	3.8	+0.08
07/19/90	18:20	3.6	+0.04
07/19/90	18:30	3.6	+0.02
07/19/90	18:40	3.5	-0.02
07/19/90	18:50	3.5	-0.06
07/19/90	19:00	3.5	-0.09
07/19/90	19:10	3.5	-0.14
07/19/90	19:20	3.5	-0.19
07/19/90	19:30	3.5	-0.26
07/19/90	19:40	3.6	-0.28
07/19/90	19:50	3.6	-0.32
07/19/90	20:00	3.6	-0.34
07/19/90	20:10	3.5	-0.37
07/19/90	20:20	3.5	-0.43
07/19/90	20:30	3.4	-0.47
07/19/90	20:40	3.4	-0.51
07/19/90	20:50	3.4	-0.52
07/19/90	21:00	3.4	-0.57
07/19/90	21:10	3.4	-0.58
07/19/90	21:20	3.3	-0.62
07/19/90	21:30	3.3	-0.64
07/19/90	21:40	3.3	-0.67
07/19/90	21:50	3.3	-0.70
07/19/90	22:00	3.3	-0.72

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Table 6 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/19/90	22:10	3.2	-0.78
07/19/90	22:20	3.2	-0.80
07/19/90	22:30	3.2	-0.86
07/19/90	22:40	3.1	-0.89
07/19/90	22:50	3.0	-0.92
07/19/90	23:00	3.0	-0.93
07/19/90	23:10	2.9	-0.96
07/19/90	23:20	2.9	-1.00
07/19/90	23:30	2.8	-1.00
07/19/90	23:40	2.8	-1.02
07/19/90	23:50	2.7	-1.05
07/20/90	00:00	2.6	-1.05
07/20/90	00:10	2.6	-1.05
07/20/90	00:20	2.5	-1.05
07/20/90	00:30	2.5	-1.06
07/20/90	00:40	2.5	-1.10
07/20/90	00:50	2.5	-1.05
07/20/90	01:00	2.5	-1.01
07/20/90	01:10	2.6	-0.98
07/20/90	01:20	2.6	-0.96
07/20/90	01:30	2.6	-0.93
07/20/90	01:40	2.6	-0.88
07/20/90	01:50	2.7	-0.83
07/20/90	02:00	2.8	-0.77
07/20/90	02:10	2.8	-0.74
07/20/90	02:20	2.8	-0.66
07/20/90	02:30	3.0	-0.62
07/20/90	02:40	3.0	-0.56
07/20/90	02:50	3.1	-0.48
07/20/90	03:00	3.2	-0.45
07/20/90	03:10	3.2	-0.39
07/20/90	03:20	3.3	-0.33
07/20/90	03:30	3.3	-0.30

Table 6 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	03:40	3.4	-0.24
07/20/90	03:50	3.4	-0.19
07/20/90	04:00	3.4	-0.16
07/20/90	04:10	3.4	-0.11
07/20/90	04:20	3.4	-0.08
07/20/90	04:30	3.4	-0.04
07/20/90	04:40	3.4	-0.04
07/20/90	04:50	3.3	+0.02
07/20/90	05:00	3.3	+0.06
07/20/90	05:10	3.4	+0.09
07/20/90	05:20	3.4	+0.10
07/20/90	05:30	3.3	+0.15
07/20/90	05:40	3.3	+0.19
07/20/90	05:50	3.3	+0.20
07/20/90	06:00	3.3	+0.27
07/20/90	06:10	3.2	+0.29
07/20/90	06:20	3.2	+0.35
07/20/90	06:30	3.1	+0.36
07/20/90	06:40	3.1	+0.39
07/20/90	06:50	3.1	+0.42
07/20/90	07:00	3.0	+0.49
07/20/90	07:10	3.0	+0.45
07/20/90	07:20	3.0	+0.53
07/20/90	07:30	3.0	+0.56
07/20/90	07:40	3.0	+0.58
07/20/90	07:50	3.0	+0.56
07/20/90	08:00	3.0	+0.62
07/20/90	08:10	3.0	+0.60
07/20/90	08:20	3.0	+0.62
07/20/90	08:30	3.0	+0.70
07/20/90	08:40	3.2	+0.70
07/20/90	08:50	3.1	+0.69
07/20/90	09:00	3.3	+0.70

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Table 6 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	09:10	3.1	+0.68
07/20/90	09:20	3.2	+0.71
07/20/90	09:30	3.3	+0.74
07/20/90	09:40	3.3	+0.75
07/20/90	09:50	3.2	+0.69
07/20/90	10:00	3.2	+0.71
07/20/90	10:10	3.3	+0.71
07/20/90	10:20	3.3	+0.70
07/20/90	10:30	3.4	+0.71
07/20/90	10:40	3.4	+0.72
07/20/90	10:50	3.4	+0.73
07/20/90	11:00	3.4	+0.70
07/20/90	11:10	3.6	+0.70
07/20/90	11:20	3.7	+0.72
07/20/90	11:30	3.8	+0.72
07/20/90	11:40	3.9	+0.72
07/20/90	11:50	3.9	+0.75
07/20/90	12:00	3.5	+0.79
07/20/90	12:10	3.7	+0.77
07/20/90	12:20	3.3	+0.72
07/20/90	12:30	3.3	+0.72
07/20/90	12:40	3.8	+0.80
07/20/90	12:50	3.7	+0.74
07/20/90	13:00	3.7	+0.73
07/20/90	13:10	3.7	+0.67
07/20/90	13:20	3.5	+0.71
07/20/90	13:30	3.5	+0.72
07/20/90	13:40	3.5	+0.72
07/20/90	13:50	3.4	+0.68
07/20/90	14:00	3.4	+0.70
07/20/90	14:10	3.5	+0.71
07/20/90	14:20	3.5	+0.78
07/20/90	14:30	3.5	+0.76

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Table 6 (Continued)

Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	14:40	3.7	+0.73
07/20/90	14:50	3.5	+0.74
07/20/90	15:00	3.5	+0.78
07/20/90	15:10	3.5	+0.72
07/20/90	15:20	3.4	+0.72
07/20/90	15:30	3.5	+0.76
07/20/90	15:40	3.4	+0.76
07/20/90	15:50	3.5	+0.72
07/20/90	16:00	3.4	+0.66
07/20/90	16:10	3.5	+0.64
07/20/90	16:20	3.5	+0.63
07/20/90	16:30	3.5	+0.62
07/20/90	16:40	3.6	+0.62
07/20/90	16:50	3.4	+0.58
07/20/90	17:00	3.4	+0.58
07/20/90	17:10	3.5	+0.53
07/20/90	17:20	3.4	+0.58
07/20/90	17:30	3.4	+0.48
07/20/90	17:40	3.4	+0.44
07/20/90	17:50	3.4	+0.42
07/20/90	18:00	3.4	+0.39
07/20/90	18:10	3.4	+0.33
07/20/90	18:20	3.3	+0.28
07/20/90	18:30	3.3	+0.25
07/20/90	18:40	3.3	+0.26
07/20/90	18:50	3.3	+0.18
07/20/90	19:00	3.2	+0.15
07/20/90	19:10	3.2	+0.13
07/20/90	19:20	3.2	+0.07
07/20/90	19:30	3.1	+0.02
07/20/90	19:40	3.2	-0.02
07/20/90	19:50	3.1	-0.07
07/20/90	20:00	3.1	-0.16

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Table 6 (Concluded)			
Date MM/DD/YY	Time HH:MM	Salinity ppt	Elevation ft
07/20/90	20:10	3.1	-0.16
07/20/90	20:20	3.1	-0.19
07/20/90	20:30	3.0	-0.21
07/20/90	20:40	3.0	-0.27
07/20/90	20:50	3.0	-0.30
07/20/90	21:00	3.0	-0.32
07/20/90	21:10	2.9	-0.36
07/20/90	21:20	3.0	-0.38
07/20/90	21:30	3.0	-0.44
07/20/90	21:40	2.9	-0.46
07/20/90	21:50	2.9	-0.51
07/20/90	22:00	2.9	-0.54
07/20/90	22:10	2.9	-0.57
07/20/90	22:20	2.9	-0.57
07/20/90	22:30	2.9	-0.57
07/20/90	22:40	2.9	-0.65
07/20/90	22:50	2.9	-0.67
07/20/90	23:00	2.9	-0.70
07/20/90	23:10	2.9	-0.71
07/20/90	23:20	2.9	-0.74
07/20/90	23:30	2.8	-0.78
07/20/90	23:40	2.8	-0.79
07/20/90	23:50	2.8	-0.80

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Table 7
Water-Surface Elevations for Station S16.0

Date MM/DD/YY	Time HH:MM	Elevation ft
07/18/90	19:00	-0.12
07/18/90	19:15	-0.10
07/18/90	19:30	-0.19
07/18/90	19:45	-0.23
07/18/90	20:00	-0.41
07/18/90	20:15	-0.25
07/18/90	20:30	-0.45
07/18/90	20:45	-0.50
07/18/90	21:00	-0.55
07/18/90	21:15	-0.55
07/18/90	21:30	-0.56
07/18/90	21:45	-0.64
07/18/90	22:00	-0.71
07/18/90	22:15	-0.77
07/18/90	22:30	-0.73
07/18/90	22:45	-0.79
07/18/90	23:00	-0.77
07/18/90	23:15	-0.75
07/18/90	23:30	-0.74
07/18/90	23:45	-0.69
07/19/90	0:00	-0.66
07/19/90	0:15	-0.61
07/19/90	0:30	-0.67
07/19/90	0:45	-0.67
07/19/90	1:00	-0.56
07/19/90	1:15	-0.51
07/19/90	1:30	-0.50
07/19/90	1:45	-0.46
07/19/90	2:00	-0.38
07/19/90	2:15	-0.33
07/19/90	2:30	-0.26
07/19/90	2:45	-0.19

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Table 7 (Continued)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	3:00	-0.12
07/19/90	3:15	-0.06
07/19/90	3:30	-0.02
07/19/90	3:45	0.04
07/19/90	4:00	0.13
07/19/90	4:15	0.18
07/19/90	4:30	0.16
07/19/90	4:45	0.21
07/19/90	5:00	0.33
07/19/90	5:15	0.40
07/19/90	5:30	0.50
07/19/90	5:45	0.48
07/19/90	6:00	0.51
07/19/90	6:15	0.55
07/19/90	6:30	0.64
07/19/90	6:45	0.63
07/19/90	7:00	0.74
07/19/90	7:15	0.72
07/19/90	7:30	0.68
07/19/90	7:45	0.80
07/19/90	8:00	0.80
07/19/90	8:15	0.86
07/19/90	8:30	0.82
07/19/90	8:45	0.79
07/19/90	9:00	0.82
07/19/90	9:15	0.81
07/19/90	9:30	0.81
07/19/90	9:45	0.81
07/19/90	10:00	0.81
07/19/90	10:15	0.82
07/19/90	10:30	0.79
07/19/90	10:45	0.79
07/19/90	11:00	0.77

Table 7 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	11:15	0.75
07/19/90	11:30	0.71
07/19/90	11:45	0.71
07/19/90	12:00	0.75
07/19/90	12:15	0.70
07/19/90	12:30	0.68
07/19/90	12:45	0.70
07/19/90	13:00	0.69
07/19/90	13:15	0.67
07/19/90	13:30	0.66
07/19/90	13:45	0.63
07/19/90	14:00	0.47
07/19/90	14:15	0.56
07/19/90	14:30	0.50
07/19/90	14:45	0.51
07/19/90	15:00	0.49
07/19/90	15:15	0.50
07/19/90	15:30	0.44
07/19/90	15:45	0.45
07/19/90	16:00	0.40
07/19/90	16:15	0.37
07/19/90	16:30	0.31
07/19/90	16:45	0.30
07/19/90	17:00	0.23
07/19/90	17:15	0.17
07/19/90	17:30	0.16
07/19/90	17:45	0.07
07/19/90	18:00	0.04
07/19/90	18:15	-0.06
07/19/90	18:30	-0.03
07/19/90	18:45	-0.10
07/19/90	19:00	-0.14
07/19/90	19:15	-0.20

Table 7 (Continued)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/19/90	19:30	-0.23
07/19/90	19:45	-0.31
07/19/90	20:00	-0.35
07/19/90	20:15	-0.40
07/19/90	20:30	-0.46
07/19/90	20:45	-0.52
07/19/90	21:00	-0.54
07/19/90	21:15	-0.54
07/19/90	21:30	-0.67
07/19/90	21:45	-0.75
07/19/90	22:00	-0.79
07/19/90	22:15	-0.84
07/19/90	22:30	-0.96
07/19/90	22:45	-0.86
07/19/90	23:00	-0.86
07/19/90	23:15	-0.95
07/19/90	23:30	-0.91
07/19/90	23:45	-0.90
07/20/90	0:00	-0.95
07/20/90	0:15	-0.94
07/20/90	0:30	-0.92
07/20/90	0:45	-0.87
07/20/90	1:00	-0.84
07/20/90	1:15	-0.78
07/20/90	1:30	-0.71
07/20/90	1:45	-0.66
07/20/90	2:00	-0.59
07/20/90	2:15	-0.54
07/20/90	2:30	-0.47
07/20/90	2:45	-0.45
07/20/90	3:00	-0.40
07/20/90	3:15	-0.36
07/20/90	3:30	-0.28

(Sheet 4 of 7)

Table 7 (Continued)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	3:45	-0.23
07/20/90	4:00	0.02
07/20/90	4:15	-0.13
07/20/90	4:30	-0.08
07/20/90	4:45	-0.02
07/20/90	5:00	0.20
07/20/90	5:15	-0.04
07/20/90	5:30	0.27
07/20/90	5:45	0.34
07/20/90	6:00	0.27
07/20/90	6:15	0.39
07/20/90	6:30	0.41
07/20/90	6:45	0.46
07/20/90	7:00	0.44
07/20/90	7:15	0.55
07/20/90	7:30	0.55
07/20/90	7:45	0.62
07/20/90	8:00	0.62
07/20/90	8:15	0.02
07/20/90	8:30	0.69
07/20/90	8:45	0.67
07/20/90	9:00	0.71
07/20/90	9:15	0.69
07/20/90	9:30	0.71
07/20/90	9:45	0.70
07/20/90	10:00	0.74
07/20/90	10:15	0.71
07/20/90	10:30	0.71
07/20/90	10:45	0.73
07/20/90	11:00	0.71
07/20/90	11:15	0.74
07/20/90	11:30	0.72
07/20/90	11:45	0.75

Table 7 (Continued)

Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	12:00	0.73
07/20/90	12:15	0.79
07/20/90	12:30	0.81
07/20/90	12:45	0.85
07/20/90	13:00	0.87
07/20/90	13:15	0.86
07/20/90	13:30	0.86
07/20/90	13:45	0.81
07/20/90	14:00	0.69
07/20/90	14:15	0.74
07/20/90	14:30	0.68
07/20/90	14:45	0.72
07/20/90	15:00	0.83
07/20/90	15:15	0.69
07/20/90	15:30	0.64
07/20/90	15:45	0.55
07/20/90	16:00	0.68
07/20/90	16:15	0.60
07/20/90	16:30	0.59
07/20/90	16:45	0.45
07/20/90	17:00	0.49
07/20/90	17:15	0.38
07/20/90	17:30	0.37
07/20/90	17:45	0.30
07/20/90	18:00	0.27
07/20/90	18:15	0.21
07/20/90	18:30	0.11
07/20/90	18:45	0.05
07/20/90	19:00	-0.05
07/20/90	19:15	-0.06
07/20/90	19:30	-0.08
07/20/90	19:45	-0.11
07/20/90	20:00	-0.28

Table 7 (Concluded)		
Date MM/DD/YY	Time HH:MM	Elevation ft
07/20/90	20:15	-0.18
07/20/90	20:30	-0.26
07/20/90	20:45	-0.34
07/20/90	21:00	-0.39
07/20/90	21:15	-0.50
07/20/90	21:30	-0.46
07/20/90	21:45	-0.58
07/20/90	22:00	-0.52
07/20/90	22:15	-0.63
07/20/90	22:30	-0.70
07/20/90	22:45	-0.77
07/20/90	23:00	-0.75
07/20/90	23:15	-0.81
07/20/90	23:30	-0.85
07/20/90	23:45	-0.87

(Sheet 7 of 7)

Table 8
Current Data Observed at Station R1.0A, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0702	3.0	2.4	115
1200	3.0	1.5	280
1307	3.0	2.1	260
1402	3.0	2.5	270
1507	3.0	3.0	265
1604	3.0	4.8	260
1707	3.0	4.2	255
1803	3.0	4.9	270
1904	3.0	4.6	270
2005	3.0	3.8	265
2103	3.0	3.4	270
2202	3.0	3.0	270
2302	3.0	2.5	260
0004	3.0	1.0	95
0104	3.0	3.3	100
0203	3.0	3.5	110
0304	3.0	3.3	100
0405	3.0	4.2	110
0507	3.0	2.9	110
0603	3.0	4.6	110
0703	3.0	2.8	110
0802	3.0	3.1	100
Middepth			
0701	14.2	1.8	120
1159	13.6	2.0	270
1304	14.5	2.5	260
1401	13.5	1.7	270
1506	13.7	2.7	270

(Sheet 1 of 3)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 8 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
1603	13.5	3.1	260
1701	12.4	3.8	250
1802	13.5	4.0	275
1902	13.0	3.6	270
2004	13.0	3.8	270
2102	13.5	2.4	270
2201	13.5	2.2	270
2302	14.0	0.8	250
0001	14.5	3.5	110
0103	14.5	2.4	100
0201	14.5	2.9	100
0302	14.5	2.9	95
0403	14.7	4.3	100
0505	14.5	2.9	100
0601	14.7	4.7	100
0701	14.5	2.6	100
0801	14.5	2.1	110
Bottom[3]			
0700	26.5	2.0	120
1158	25.3	1.0	275
1300	27.0	1.6	270
1400	25.0	1.8	270
1500	25.5	2.1	265
1600	25.0	2.2	255
1700	24.8	2.4	260
1800	25.0	2.7	280
1900	24.0	3.3	280
2000	24.0	3.3	270
2100	25.0	2.6	270
2200	25.0	3.0	265
			(Sheet 2 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 8 (Concluded)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
		Bottom (Continued)	
2300	26.0	1.0	100
0000	27.0	1.8	80
0100	27.0	2.0	90
0200	27.0	2.4	90
0301	27.0	2.5	90
0401	27.5	2.1	90
0503	27.0	2.2	100
0600	27.5	2.8	90
0700	27.0	2.5	100
0800	27.0	2.2	100

(Sheet 3 of 3)

Table 9
Current Data Observed at Station R1.0B, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0755	3.0	1.6	110
1213	3.0	1.2	300
1320	3.0	2.2	280
1409	3.0	2.2	280
1520	3.0	3.5	260
1612	3.0	3.4	250
1712	3.0	4.2	255
1812	3.0	4.4	265
1916	3.0	4.3	270
2019	3.0	4.1	260
2119	3.0	3.4	270
2214	3.0	3.2	280
2313	3.0	0.8	250
0016	3.0	0.8	100
0115	3.0	3.2	100
0216	3.0	3.7	100
0315	3.0	3.0	105
0416	3.0	3.4	100
0516	3.0	3.0	100
0612	3.0	2.9	110
0714	3.0	2.5	90
0816	3.0	2.2	90
One-Quarter			
0754	9.0	3.7	110
1212	9.6	1.0	290
1319	10.0	1.9	270
1408	10.2	2.2	265
1518	10.0	2.9	260

(Sheet 1 of 4)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 9 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
One-Quarter (Continued)			
1611	9.7	3.4	260
1711	10.5	4.2	250
1811	10.2	4.5	270
1915	10.2	4.1	265
2018	10.5	4.1	265
2115	10.2	3.3	260
2213	10.0	2.9	260
2312	10.5	0.6	255
0015	10.5	3.4	115
0114	10.5	3.2	100
0215	10.5	3.5	100
0314	11.0	3.2	100
0415	10.5	5.1	100
0515	10.5	3.6	100
0611	10.5	5.0	100
0713	10.5	2.8	90
0815	10.0	3.1	100
Middepth			
0751	18.0	3.0	120
1209	19.3	1.0	270
1317	20.0	2.1	270
1407	20.5	2.1	270
1517	20.0	2.6	260
1610	19.5	3.2	260
1710	21.0	3.4	250
1810	20.5	4.2	270
1914	20.5	4.1	275
2016	21.0	3.6	270
2114	20.5	2.5	265
2212	20.0	2.5	265
2311	21.0	0.3	10

(Sheet 2 of 4)

Table 9 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
		Middepth (Continued)	
0014	21.0	3.1	100
0113	21.0	2.5	90
0212	21.0	3.8	100
0313	22.0	3.4	90
0414	21.0	3.5	100
0513	21.0	3.4	100
0609	21.0	2.5	100
0712	21.0	2.5	100
0814	20.0	2.8	100
		Three-Quarter	
0750	27.0	2.7	135
1208	28.9	0.8	300
1315	30.0	1.5	275
1406	30.7	1.6	270
1516	30.0	2.7	260
1609	29.2	2.8	250
1709	31.5	2.6	255
1809	30.7	3.2	270
1912	30.7	3.2	270
2015	31.5	2.9	270
2112	30.7	2.8	280
2211	30.0	0.8	290
2310	31.5	0.3	35
0014	31.5	2.1	100
0110	31.5	2.3	100
0211	31.5	3.3	90
0312	33.0	3.0	90
0412	31.5	2.9	100
0512	31.5	4.0	100
0608	31.5	2.7	90
0710	31.5	2.5	115
			(Sheet 3 of 4)

Table 9 (Concluded)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
Three-Quarter (Continued)			
0812	30.0	2.4	90
0512	31.5	4.0	100
0608	31.5	2.7	90
0710	31.5	2.5	115
0812	30.0	2.4	90
Bottom[3]			
0748	34.0	1.2	130
1206	37.4	1.2	330
1312	38.0	1.6	235
1405	39.0	1.8	265
1515	38.0	2.0	260
1608	37.0	3.5	250
1708	40.0	2.4	240
1808	39.0	2.2	270
1910	39.0	3.0	270
2014	40.0	2.3	270
2111	39.0	1.4	310
2210	38.0	0.8	230
2309	40.0	0.2	70
0013	40.0	1.0	70
0109	40.0	3.2	95
0210	40.0	2.4	85
0311	42.0	2.2	80
0411	40.0	2.8	100
0511	40.0	4.4	95
0607	40.0	3.8	100
0709	40.0	2.8	100
0810	38.0	0.8	70
			(Sheet 4 of 4)

[3] Bottom measurement obtained at 2.0 ft above actual bottom

Table 10
Current Data Observed at Station R1.0C, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
1228	3.0	1.8	330
1335	3.0	1.5	285
1420	3.0	2.9	275
1535	3.0	2.9	250
1625	3.0	3.6	250
1720	3.0	3.0	275
1822	3.0	4.1	270
1925	3.0	4.9	260
2029	3.0	3.7	250
2129	3.0	4.2	260
2224	3.0	2.8	250
2322	3.0	0.5	240
0028	3.0	2.5	75
0127	3.0	2.1	100
0231	3.0	3.8	95
0330	3.0	3.3	110
0427	3.0	3.7	110
0528	3.0	3.7	90
0623	3.0	4.5	90
0723	3.0	2.5	110
0826	3.0	1.6	90
One-Quarter			
1226	12.5	1.5	290
1334	12.5	3.1	275
1419	12.0	2.5	270
1534	12.5	3.2	270
1623	12.1	3.5	260
1719	12.5	3.5	280

(Sheet 1 of 4)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 10 (Continued)

Hour CST	Depth ft	Speed fps	Direction deg
One-Quarter (Continued)			
1821	12.2	3.9	270
1924	10.5	4.9	270
2028	10.7	4.0	255
2128	12.0	2.9	260
2223	11.7	2.8	245
2321	12.0	0.5	290
0028	11.8	3.6	70
0128	12.0	3.2	110
0230	11.7	4.8	95
0329	10.7	3.8	90
0425	11.7	5.1	90
0527	12.0	4.4	100
0622	12.5	3.0	100
0722	12.5	2.6	90
0825	12.5	2.6	110
Middepth			
1225	25.0	1.7	280
1331	25.0	2.5	275
1418	24.0	2.4	270
1532	25.0	3.0	260
1622	24.2	2.6	250
1718	25.0	3.0	270
1820	24.5	3.5	280
1923	21.0	4.1	270
2027	21.5	3.7	265
2127	24.0	3.1	270
2222	23.5	2.0	270
2320	24.0	0.4	55
0025	23.7	4.2	100
0125	24.0	3.8	100
0229	23.5	3.6	90

(Sheet 2 of 4)

Table 10 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
0327	21.5	4.0	90
0424	23.5	4.5	100
0525	24.0	3.7	100
0621	25.0	2.9	110
0721	25.0	3.0	90
0824	25.0	2.9	100
Three-Quarter			
1224	37.5	1.2	270
1329	37.5	0.9	270
1416	36.0	2.3	265
1530	37.5	3.5	265
1621	36.3	2.5	255
1717	37.5	2.2	280
1818	36.7	2.8	290
1922	31.5	3.5	280
2026	32.2	2.9	270
2126	36.0	2.8	290
2221	35.2	1.5	290
2319	36.0	0.4	100
0020	35.5	3.4	105
0124	36.0	2.7	95
0228	35.2	3.4	90
0326	32.2	3.7	90
0423	35.2	3.1	90
0524	36.0	3.2	90
0620	37.5	2.2	90
0720	37.5	2.7	90
0822	37.5	3.3	95

(Sheet 3 of 4)

Table 10 (Concluded)			
Hour CST	Depth ft	Speed fps	Direction deg
Bottom[3]			
1221	48.0	0.8	240
1326	48.0	0.8	260
1414	46.0	1.9	240
1528	48.0	2.0	260
1620	46.5	3.4	270
1716	48.0	2.1	280
1817	47.0	2.8	280
1921	40.0	3.2	285
2025	41.0	2.3	280
2125	46.0	2.0	290
2220	45.0	0.8	280
2318	46.0	0.3	120
0019	47.5	1.6	100
0123	46.0	2.6	100
0227	45.0	3.4	90
0325	41.0	3.6	100
0422	45.0	3.0	90
0521	46.0	3.8	90
0618	48.0	2.3	90
0719	48.0	2.3	90
0820	48.0	1.3	90
			(Sheet 4 of 4)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 11
Current Data Observed at Station R1.0D, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
1227	3.0	1.2	290
1350	3.0	1.8	275
1426	3.0	2.7	290
1552	3.0	4.2	255
1634	3.0	4.1	255
1730	3.0	3.3	270
1831	3.0	4.1	265
1936	3.0	3.8	265
2047	3.0	3.0	250
2140	3.0	2.8	255
2234	3.0	2.9	245
2333	3.0	2.6	240
0041	3.0	2.5	90
0140	3.0	2.4	105
0244	3.0	3.1	95
0341	3.0	3.1	90
0439	3.0	3.1	95
0539	3.0	3.8	90
0631	3.0	3.0	90
0732	3.0	2.2	90
0837	3.0	2.7	100
One-Quarter			
1349	11.5	1.8	275
1552	11.7	2.9	270
1729	10.2	3.1	270
1830	12.0	3.6	270
1934	11.8	3.5	270
2046	11.5	2.7	265

(Sheet 1 of 4)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 11 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
One-Quarter (Continued)			
2139	11.5	3.0	265
2233	11.5	1.9	255
2332	11.5	1.9	290
0036	12.0	2.1	100
0139	12.0	2.2	90
0242	10.5	3 5	100
0340	11.0	[illegible]	100
0436	12.0	4.8	95
0536	12.0	5.4	90
0630	12.0	3.1	90
0731	12.0	2.1	100
0836	12.0	2.4	110
Middepth			
1227	21.8	1.8	270
1347	23.0	2.1	270
1425	23.0	3.0	265
1547	23.5	3.5	265
1632	21.0	3.6	260
1726	20.5	2.9	280
1829	24.0	2.9	285
1933	23.7	3.0	285
2045	23.0	3.1	275
2138	23.0	3.8	280
2232	23.0	0.8	285
2331	23.0	1.8	40
0037	24.0	2.3	100
0138	24.0	3.1	100
0241	21.0	2.8	100
0339	22.0	3.4	100
0437	24.0	3.1	100
0537	24.0	2.7	100

(Sheet 2 of 4)

Table 11 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
0629	24.0	5.1	90
0730	24.0	2.8	110
0835	24.0	3.0	120
Three-Quarter			
1345	34.5	1.1	270
1545	35.2	3.1	260
1727	30.7	2.5	285
1828	36.0	2.3	285
1932	35.4	2.5	290
2044	34.5	2.3	290
2137	34.5	3.5	290
2231	34.5	1.7	315
2330	34.5	1.0	80
0036	36.0	3.2	90
0137	36.0	2.9	90
0239	31.5	2.9	100
0338	33.0	3.0	100
0436	36.0	3.5	105
0535	36.0	4.0	100
0628	36.0	4.1	90
0729	36.0	2.5	110
0834	36.0	2.8	120
Bottom[3]			
1225	43.6	1.5	255
1340	44.0	1.3	270
1423	44.0	0.8	250
1541	45.0	3.4	250
1630	42.0	2.4	250
1725	41.0	2.4	285
1827	46.0	2.2	285

(Sheet 3 of 4)

[3] Bottom measurement obtained at 2.0 ft above actual bottom

Table 11 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1931	45.5	2.7	295
2043	44.0	2.2	290
2136	44.0	1.8	280
2230	44.0	1.4	305
2329	44.0	1.9	130
0035	46.0	2.0	80
0135	46.0	2.5	90
0238	40.0	2.6	100
0337	42.0	2.8	90
0435	46.0	2.4	90
0534	46.0	3.1	90
0627	46.0	2.8	90
0728	46.0	2.8	110
0832	46.0	1.2	130

(Sheet 4 of 4)

Table 12
Current Data Observed at Station R2.0A, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0704	3.0	1.4	132
0803	3.0	1.0	170
0902	3.0	0.5	250
1003	3.0	0.4	320
1102	3.0	0.6	325
1203	3.0	1.1	300
1302	3.0	1.0	318
1403	3.0	1.6	310
1503	3.0	3.1	300
1603	3.0	4.0	305
1703	3.0	3.9	304
1803	3.0	3.8	310
1902	3.0	4.2	302
2005	3.0	4.2	308
2103	3.0	3.8	312
2203	3.0	3.1	320
2305	3.0	1.9	350
0004	3.0	0.7	32
0102	3.0	2.1	128
0202	3.0	3.2	120
0302	3.0	3.9	130
0402	3.0	4.0	133
0503	3.0	3.2	149
0602	3.0	2.2	160
0703	3.0	1.9	160
0804	3.0	1.3	186
Middepth			
0702	16.4	1.6	132
0801	16.2	1.3	128

(Sheet 1 of 3)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 12 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
0901	16.3	0.8	63
1002	16.3	0.3	318
1101	15.6	0.4	35
1202	15.1	0.5	330
1301	15.0	0.8	320
1402	14.9	1.2	308
1502	14.4	2.2	310
1602	14.6	2.8	315
1702	14.7	3.6	314
1802	14.7	4.5	312
1901	14.7	4.4	310
2004	14.5	4.4	320
2102	14.8	3.7	310
2202	14.7	3.0	312
2304	14.8	1.6	318
0003	15.4	0.4	72
0101	15.7	2.0	118
0201	16.0	2.2	120
0301	16.2	3.7	120
0401	16.3	3.6	125
0502	16.3	2.8	120
0601	16.2	3.0	128
0702	16.2	1.9	126
0803	15.6	1.7	140
Bottom[3]			
0701	30.8	1.2	132
0800	30.4	1.0	130
0900	30.6	0.5	48
1000	30.7	0.4	120

(Sheet 2 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 12 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1100	29.2	0.3	35
1201	28.2	0.3	356
1300	28.0	0.4	324
1401	27.8	0.7	322
1501	26.8	1.6	325
1601	27.3	1.6	318
1701	27.3	2.3	330
1801	27.4	2.8	328
1900	27.4	3.3	324
2003	27.0	3.3	328
2101	27.5	2.1	311
2201	27.4	2.0	320
2303	27.6	0.8	350
0002	28.8	0.6	133
0100	29.4	1.5	145
0200	30.0	2.4	130
0300	30.3	3.0	128
0400	30.5	2.5	120
0501	30.6	2.0	111
0600	30.3	2.0	118
0701	30.3	1.4	124
0802	29.2	0.9	108

(Sheet 3 of 3)

Table 13
Current Data Observed at Station R2.0B, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0717	3.0	1.6	140
0814	3.0	1.0	130
0914	3.0	0.8	218
1013	3.0	0.4	300
1112	3.0	0.4	350
1213	3.0	0.6	340
1314	3.0	0.4	310
1413	3.0	1.5	314
1514	3.0	2.4	295
1613	3.0	1.7	318
1713	3.0	3.9	325
1814	3.0	4.2	315
1913	3.0	4.5	315
2022	3.0	4.2	320
2113	3.0	3.8	330
2214	3.0	2.4	330
2315	3.0	1.3	354
0015	3.0	1.0	118
0114	3.0	3.2	128
0213	3.0	4.5	130
0313	3.0	5.0	128
0413	3.0	4.0	132
0514	3.0	3.5	149
0612	3.0	2.6	150
0712	3.0	2.2	155
0818	3.0	1.2	156
One-Quarter			
0715	6.0	1.6	138

(Sheet 1 of 5)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 13 (Continued)

Hour CST	Depth ft	Speed fps	Direction deg
One-Quarter (Continued)			
0813	4.6	1.7	142
0913	5.7	0.5	160
1012	4.3	0.4	300
1111	4.3	0.3	360
1212	4.5	0.7	338
1313	4.5	0.4	320
1412	4.5	1.5	321
1513	7.1	2.4	300
1612	6.7	2.8	310
1712	5.6	3.5	315
1813	4.2	4.2	316
1912	4.2	4.7	320
2021	4.0	4.7	320
2112	4.0	3.9	320
2213	4.0	2.1	320
2314	4.0	1.4	342
0014	4.1	0.9	94
0113	4.9	3.4	120
0212	4.9	4.0	130
0312	5.2	4.2	132
0412	4.9	4.1	128
0513	5.4	2.7	146
0611	4.7	2.5	132
0711	6.2	2.3	139
0817	5.0	1.0	150
Middepth			
0714	9.0	1.7	115
0812	9.2	1.5	115
0912	11.4	0.6	150
1011	8.7	0.3	320
1110	8.6	0.6	358

(Sheet 2 of 5)

Table 13 (Continued)

Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
1211	9.0	0.5	300
1312	8.9	1.1	330
1411	9.0	1.4	322
1512	14.2	2.0	309
1611	13.4	2.4	312
1711	11.1	3.6	308
1812	8.4	4.1	316
1911	8.3	4.6	312
2020	8.0	4.5	312
2111	8.0	3.9	314
2212	8.0	2.7	320
2313	7.9	1.5	324
0013	8.2	0.7	80
0112	9.8	3.3	128
0211	9.8	3.5	130
0311	10.4	4.4	135
0411	9.7	3.6	130
0512	10.8	3.3	120
0610	9.4	2.7	129
0710	12.3	2.3	132
0816	10.0	0.9	147
Three-Quarter			
0713	12.5	1.6	130
0811	13.8	1.2	130
0911	17.1	0.5	150
1010	13.4	0.4	21
1109	12.9	0.4	346
1210	13.5	0.6	300
1311	13.4	1.2	330
1410	13.5	1.5	320
1511	21.3	1.2	314

(Sheet 3 of 5)

Table 13 (Continued)

Hour CST	Depth ft	Speed fps	Direction deg
Three-Quarter (Continued)			
1610	20.1	1.8	320
1710	16.7	3.1	302
1811	12.6	3.6	310
1910	12.5	4.0	300
2019	12.0	4.3	310
2110	12.0	3.5	310
2211	12.0	2.0	320
2312	11.9	0.8	322
0012	12.3	0.7	118
0111	14.7	2.6	128
0210	14.7	3.0	130
0310	15.6	3.1	142
0410	14.6	2.6	120
0511	16.2	3.0	135
0609	14.1	2.2	130
0709	18.5	1.8	120
0815	15.0	1.5	134
Bottom[3]			
0712	16.1	1.3	124
0809	16.4	1.0	130
0910	20.8	0.2	220
1009	15.5	0.4	22
1108	15.3	0.4	342
1209	16.0	0.6	288
1310	15.8	0.5	345
1409	16.0	1.0	302
1510	26.5	1.0	310
1609	24.8	1.4	332
1709	20.2	2.5	302

(Sheet 4 of 5)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 13 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1810	14.8	2.8	314
1909	14.6	3.2	312
2018	14.0	3.3	308
2109	14.0	3.1	310
2210	14.0	2.3	319
2311	13.8	0.6	324
0011	14.3	0.8	139
0110	17.5	1.6	120
0209	17.6	2.9	130
0309	18.7	3.1	135
0409	17.4	2.6	120
0510	19.5	2.9	120
0606	16.8	1.9	140
0706	22.5	2.1	133
0814	18.0	1.2	156

(Sheet 5 of 5)

Table 14
Current Data Observed at Station R2.0C, 19-20 July 1990

Hour CST	Depth ft	Spped fps	Direction deg[1]
Surface[2]			
0729	3.0	2.2	130
0825	3.0	1.2	150
0925	3.0	0.7	213
1021	3.0	0.3	292
1122	3.0	0.5	356
1224	3.0	0.5	8
1325	3.0	0.6	343
1424	3.0	1.4	330
1524	3.0	2.6	324
1621	3.0	3.6	325
1723	3.0	4.0	330
1823	3.0	3.3	328
1924	3.0	3.4	330
2037	3.0	3.7	320
2135	3.0	2.7	330
2223	3.0	2.1	330
2325	3.0	1.5	342
0024	3.0	1.4	135
0124	3.0	4.3	132
0223	3.0	5.8	135
0323	3.0	4.7	128
0423	3.0	4.1	134
0533	3.0	4.5	131
0621	3.0	3.4	140
0721	3.0	2.6	139
0827	3.0	1.4	154
One-Quarter			
0727	11.4	2.1	123
0824	11.7	1.5	130

(Sheet 1 of 5)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 14 (Continued)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
One-Quarter (Continued)			
0924	9.3	0.8	158
1020	11.6	0.4	202
1122	11.5	0.5	336
1223	11.7	0.4	322
1324	11.4	1.0	309
1423	7.8	1.6	316
1523	7.2	2.4	318
1620	7.5	3.6	320
1722	7.3	3.5	326
1822	7.5	3.5	324
1923	7.4	3.5	330
2036	11.1	4.4	319
2134	10.9	3.5	322
2222	11.2	3.1	320
2324	11.0	1.3	324
0023	11.2	0.8	146
0123	9.9	4.3	128
0222	11.7	4.8	130
0322	12.0	5.6	130
0422	10.7	4.4	130
0532	11.3	4.3	128
0620	10.7	3.3	142
0720	10.2	3.0	139
0826	9.7	2.2	140
Middepth			
0725	22.8	2.0	135
0822	22.7	1.5	131
0923	18.5	0.7	150
1019	23.3	0.3	70
1120	23.0	0.5	320
1222	23.4	0.6	330

Table 14 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
	Middepth (Continued)		
1323	22.8	1.1	318
1422	15.7	1.6	322
1522	14.4	2.3	320
1619	15.1	3.1	320
1721	14.5	3.6	322
1821	15.0	3.5	320
1922	14.7	3.2	315
2035	22.2	4.5	314
2133	21.8	4.7	316
2221	22.3	2.6	310
2323	22.0	1.0	332
0022	22.3	0.2	146
0122	19.8	3.6	130
0221	23.3	4.0	138
0321	23.9	*	132
0421	21.4	4.0	132
0531	22.5	3.7	141
0619	21.4	3.2	143
0719	20.3	2.9	132
0825	19.3	1.9	120
	Three-Quarter		
0724	34.7	1.4	132
0821	33.5	1.4	130
0922	27.7	0.5	150
1018	35.9	0.2	90
1119	34.5	0.5	330
1221	36.1	0.6	330
1322	34.2	1.2	311
1421	23.5	1.3	332
1521	21.6	2.0	324
1618	22.6	2.4	320
			(Sheet 3 of 5)

Table 14 (Continued)

Hour CST	Depth ft	Speed fps	Direction deg
Three-Quarter (Continued)			
1720	21.8	3.1	316
1820	22.5	3.3	318
1921	22.1	4.1	315
2034	33.3	3.8	312
2132	32.9	2.6	328
2220	33.5	3.0	322
2322	33.0	0.5	30
0021	33.5	0.9	129
0121	29.7	3.0	122
0220	35.0	3.3	130
0320	35.9	5.2	130
0420	32.1	4.4	121
0530	33.8	3.6	132
0618	32.1	3.1	132
0718	30.5	2.8	130
0824	29.0	1.9	120
Bottom[3]			
0723	43.7	1.1	139
0819	43.4	0.9	135
0921	35.0	0.4	160
1017	44.6	0.2	87
1118	44.0	0.5	288
1220	44.9	0.8	340
1321	43.6	0.9	312
1420	29.4	1.0	330
1520	26.8	1.2	300
1617	28.2	1.5	320
1719	27.0	2.4	315
1819	28.0	2.9	319
1920	27.3	3.3	310

(Sheet 4 of 5)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 14 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
2033	42.4	1.9	320
2131	41.6	2.2	316
2219	42.5	1.2	330
2321	42.0	0.4	32
0020	42.5	1.0	145
0120	37.5	1.5	120
0219	44.5	2.5	120
0319	45.8	4.1	132
0419	40.8	2.4	130
0529	43.0	3.7	138
0617	40.8	2.4	142
0717	38.6	2.1	142
0823	36.6	1.7	147

(Sheet 5 of 5)

Table 15
Current Data Observed at Station R2.0D, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0738	3.0	1.4	135
0832	3.0	0.9	149
0934	3.0	0.8	202
1028	3.0	0.4	75
1130	3.0	0.6	10
1232	3.0	0.6	357
1332	3.0	0.8	320
1432	3.0	1.5	338
1532	3.0	2.7	330
1628	3.0	3.7	330
1734	3.0	4.5	332
1830	3.0	4.5	329
1935	3.0	4.4	330
2049	3.0	3.8	330
2125	3.0	3.8	331
2232	3.0	2.8	338
2332	3.0	1.3	6
0032	3.0	1.5	158
0136	3.0	4.2	146
0232	3.0	3.9	149
0332	3.0	4.3	148
0437	3.0	2.8	150
0533	3.0	2.5	150
0628	3.0	2.4	150
0728	3.0	1.8	154
0834	3.0	1.4	158
Middepth			
0736	8.0	1.2	150
0831	7.9	1.4	155

(Sheet 1 of 3)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 15 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
0933	8.2	0.4	193
1027	8.1	0.2	75
1129	8.0	0.5	340
1231	7.9	0.7	322
1331	7.8	1.0	300
1431	7.7	1.2	350
1531	7.6	2.7	320
1627	7.5	3.2	330
1733	7.3	3.6	330
1829	7.2	4.0	330
1934	7.1	3.9	332
2046	7.0	3.5	330
2124	6.9	3.3	332
2231	7.1	1.8	332
2331	7.4	0.2	42
0031	7.7	1.8	168
0136	7.9	3.8	150
0231	7.9	3.5	146
0331	8.1	4.2	149
0436	8.0	2.8	149
0532	8.0	2.4	140
0627	8.0	2.0	155
0727	7.9	1.8	160
0833	8.0	0.6	150
Bottom[3]			
0735	14.0	1.0	150
0830	13.8	1.1	140
0932	14.4	0.3	250
1026	14.2	0.2	256
1128	14.0	0.4	295
			(Sheet 2 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 15 (Concluded)			
Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1230	13.8	0.6	326
1330	13.6	0.8	304
1430	13.5	0.7	306
1530	13.2	1.5	340
1626	12.9	2.1	330
1732	12.6	2.7	331
1826	12.4	3.1	330
1933	12.2	3.2	331
2047	12.0	2.7	330
2123	11.8	2.8	343
2230	12.2	1.4	338
2330	12.8	0.4	110
0030	13.4	1.2	170
0134	13.7	2.7	167
0230	13.7	2.7	120
0330	14.2	3.3	142
0435	14.0	3.0	149
0531	13.9	2.1	156
0626	14.0	2.0	158
0726	13.8	1.0	180
0832	14.0	0.5	188
			(Sheet 3 of 3)

Table 16
Current Data Observed at Station R3.0A, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0733	3.0	1.2	210
0827	3.0	0.9	235
0914	3.0	0.4	250
1005	3.0	0.4	270
1104	3.0	0.7	345
1204	3.0	0.3	350
1305	3.0	0.3	315
1403	3.0	0.8	340
1504	3.0	0.7	330
1603	3.0	1.0	2
1704	3.0	1.2	350
1802	3.0	1.7	345
1904	3.0	2.0	340
2002	3.0	1.9	336
2104	3.0	2.1	344
2203	3.0	1.7	340
2304	3.0	1.0	335
0003	3.0	0.2	345
0103	3.0	1.0	174
0203	3.0	1.9	160
0304	3.0	1.2	170
0403	3.0	1.1	170
0521	3.0	1.2	150
0605	3.0	0.8	170
0704	3.0	0.6	174
0731	3.0	0.8	205
Middepth			
0730	5.0	1.2	164

(Sheet 1 of 3)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 16 (Continued)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
Middepth (Continued)			
0825	5.0	0.8	205
0912	5.0	0.6	220
1003	5.0	0.3	315
1102	5.3	0.2	93
1202	5.3	0.3	25
1303	5.5	0.2	50
1402	5.3	0.4	345
1502	5.2	0.9	324
1602	5.0	1.0	358
1703	5.0	1.2	350
1801	5.0	1.5	336
1903	5.0	1.6	336
2001	4.8	1.3	336
2103	4.7	1.6	338
2202	4.7	1.3	335
2303	5.0	0.6	330
0002	4.8	0.5	308
0102	4.6	0.6	164
0202	4.8	1.4	174
0303	5.0	1.4	152
0402	5.0	1.2	165
0520	5.0	1.2	145
0604	5.0	0.9	162
0703	5.0	0.9	164
0730	5.0	0.8	195
Three-Quarter			
1501	7.0	0.7	330
1902	7.0	1.5	330
2102	6.0	1.2	335
2302	7.0	0.6	320
0101	6.0	0.8	153

(Sheet 2 of 3)

Table 16 (Concluded)			
Hour CST	Depth ft	Speed fps	Direction deg
Three-Quarter (Continued)			
0302	7.0	1.3	150
0519	7.0	0.7	130
0702	7.0	0.7	170
Bottom[3]			
0725	9.0	0.6	160
0824	9.0	0.8	160
0908	9.0	0.5	130
1002	9.0	0.5	180
1100	9.5	0.5	184
1201	9.5	0.2	268
1301	10.0	0.2	60
1400	9.5	0.2	340
1500	9.4	0.4	308
1601	9.0	0.4	12
1701	9.0	0.9	330
1800	8.9	1.0	342
1901	9.0	1.0	330
2000	8.5	1.1	332
2101	8.4	1.2	332
2201	8.3	0.6	355
2301	9.0	0.4	355
0001	8.5	0.4	272
0100	8.3	0.7	172
0201	8.5	1.0	175
0301	9.0	1.1	146
0401	9.0	0.8	160
0518	9.0	1.0	120
0602	9.0	1.1	150
0701	9.0	0.7	160
0729	9.0	0.6	180

(Sheet 3 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 17
Current Data Observed at Station R3.0B, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0748	3.0	0.4	214
0835	3.0	0.5	230
0924	3.0	1.2	70
1014	3.0	0.7	280
1114	3.0	0.3	15
1208	3.0	0.5	315
1314	3.0	0.4	328
1409	3.0	0.9	320
1512	3.0	0.8	345
1610	3.0	1.1	5
1712	3.0	1.4	352
1809	3.0	1.8	345
1914	3.0	2.1	345
2009	3.0	1.8	336
2113	3.0	1.7	350
2210	3.0	1.7	345
2312	3.0	1.0	350
0008	3.0	0.1	290
0111	3.0	1.0	172
0210	3.0	1.8	156
0316	3.0	1.7	158
0409	3.0	1.2	162
0531	3.0	1.3	160
0610	3.0	1.0	160
0710	3.0	0.7	170
0738	3.0	0.6	210
One-Quarter			
1913	4.0	2.0	345
2112	4.0	1.9	345

(Sheet 1 of 4)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 17 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
One-Quarter (Continued)			
2311	4.0	1.0	348
0110	4.0	1.0	170
0315	4.0	2.1	162
0530	4.0	1.5	155
Middepth			
0745	6.5	0.6	160
0832	6.5	0.8	174
0922	6.5	0.6	130
1012	6.0	0.7	172
1112	6.8	0.2	105
1207	6.8	0.2	60
1310	6.8	0.2	15
1408	6.9	0.3	240
1510	7.0	0.6	15
1609	7.0	0.9	355
1710	6.5	1.1	340
1808	6.0	1.6	345
1912	6.4	1.9	336
2008	6.5	2.0	322
2111	6.0	1.7	335
2209	6.0	1.4	336
2310	6.3	0.8	342
0007	6.5	0.3	280
0110	6.5	1.0	164
0209	6.0	1.3	140
0314	6.5	2.1	155
0408	6.5	1.6	164
0529	6.5	1.6	154
0609	6.8	1.4	150
0709	6.5	1.3	170
0737	6.8	1.0	190

(Sheet 2 of 4)

Table 17 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
		Three-Quarter	
1911	8.0	1.6	335
2111	8.0	1.3	322
2309	8.0	0.8	338
0109	8.0	0.9	170
0313	8.0	2.0	154
0528	8.0	1.4	155
		Bottom[3]	
0740	12.0	1.0	128
0830	12.0	1.0	170
0920	12.0	0.6	180
1009	11.0	0.8	170
1110	12.5	0.4	150
1208	12.5	0.3	128
1308	12.5	0.1	84
1406	12.8	0.1	50
1508	13.0	0.4	68
1608	13.0	0.9	310
1708	12.0	0.5	350
1806	11.0	0.9	345
1910	11.8	1.2	340
2007	12.0	1.1	326
2109	11.0	0.9	350
2208	11.0	1.5	345
2307	11.5	0.3	320
0006	12.0	0.2	320
0106	12.0	0.4	200
0208	11.0	1.0	140
0312	12.0	1.6	166
0407	12.0	1.0	184
0527	12.0	1.2	155
			(Sheet 3 of 4)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 17 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
0606	12.5	1.0	165
0707	12.0	1.0	160
0736	12.5	0.7	220

(Sheet 4 of 4)

Table 18
Current Data Observed at Station R3.0C, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0754	3.0	1.0	130
0746	3.0	0.7	190
0932	3.0	1.0	220
1018	3.0	0.4	310
1121	3.0	0.6	360
1216	3.0	0.4	345
1321	3.0	0.3	318
1412	3.0	0.4	345
1520	3.0	0.7	12
1619	3.0	1.0	10
1723	3.0	1.4	360
1815	3.0	1.5	354
1924	3.0	1.5	350
2018	3.0	1.6	348
2121	3.0	1.8	350
2217	3.0	1.4	340
2319	3.0	1.0	330
0015	3.0	0.2	355
0119	3.0	0.7	170
0222	3.0	1.6	172
0331	3.0	3.1	160
0419	3.0	2.5	166
0541	3.0	1.6	150
0617	3.0	1.3	150
0717	3.0	1.2	145
0749	3.0	1.0	165
Middepth			
0752	4.5	0.6	155
0744	4.5	0.7	170

(Sheet 1 of 3)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 18 (Continued)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
	Middepth (Continued)		
0931	4.5	0.9	150
1017	4.5	0.6	270
1120	4.5	0.2	35
1214	4.4	0.4	350
1320	4.5	0.1	264
1414	4.5	0.3	312
1519	4.5	0.7	345
1618	4.4	1.0	4
1722	4.3	1.5	350
1814	4.3	1.5	348
1923	4.3	1.3	345
2017	4.0	1.3	345
2120	4.0	1.5	346
2216	4.0	1.3	335
2318	4.0	0.9	325
0014	4.0	0.4	330
0118	4.3	0.7	190
0220	4.3	1.5	170
0330	4.3	3.0	165
0418	4.3	2.2	166
0540	4.5	1.4	160
0616	4.5	1.3	154
0716	4.5	1.2	154
0748	4.5	1.1	160
	Three-Quarter		
1721	6.0	1.2	345
1922	6.0	0.5	345
2119	6.0	0.9	340
2317	6.0	0.6	318
0117	6.0	0.8	180
0328	6.0	1.4	155

(Sheet 2 of 3)

Table 18 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Three-Quarter (Continued)			
0539	6.0	1.3	164
Bottom[3]			
0753	8.0	0.7	155
0740	8.0	1.0	174
0928	8.0	0.7	157
1016	8.0	0.5	130
1118	8.0	0.4	170
1213	7.8	0.5	180
1318	8.0	0.3	225
1414	7.9	0.3	250
1516	8.0	0.3	270
1617	7.8	0.8	4
1720	7.5	0.9	352
1813	7.5	0.8	340
1921	7.5	0.5	325
2016	7.0	0.6	355
2118	7.0	0.6	340
2215	7.0	0.8	330
2316	7.0	0.7	320
0013	7.0	0.3	315
0116	7.5	0.7	186
0218	7.5	0.7	188
0327	7.5	1.2	160
0417	7.5	2.0	170
0538	8.0	0.9	150
0615	8.0	1.2	175
0715	8.0	1.0	180
0747	8.0	0.9	150

(Sheet 3 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 19
Current Data Observed at Station R3.0D, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0812	3.0	1.0	155
0858	3.0	1.1	110
0940	3.0	0.5	30
1024	3.0	0.5	105
1126	3.0	0.4	35
1222	3.0	0.4	350
1327	3.0	0.4	10
1422	3.0	0.2	312
1531	3.0	0.8	10
1625	3.0	1.0	10
1730	3.0	1.7	360
1821	3.0	1.6	354
1933	3.0	1.8	350
2036	3.0	1.8	352
2129	3.0	1.8	350
2223	3.0	1.4	344
2325	3.0	1.1	340
0021	3.0	0.3	5
0125	3.0	0.8	162
0230	3.0	1.7	170
0339	3.0	2.5	158
0425	3.0	2.3	180
0547	3.0	1.1	175
0622	3.0	1.0	150
0722	3.0	1.0	135
0757	3.0	1.0	165
Middepth			
0810	5.0	0.8	160
0857	4.5	0.8	130

(Sheet 1 of 3)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 19 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
0939	4.8	0.5	35
1022	4.8	0.5	150
1125	4.8	0.3	25
1220	4.9	0.3	25
1326	4.8	0.3	15
1421	4.7	0.4	307
1530	5.0	0.8	338
1624	4.6	1.2	355
1729	4.7	1.6	350
1820	4.5	1.8	344
1932	4.5	1.6	342
2035	4.5	1.5	346
2128	4.5	1.4	340
2222	4.5	1.1	330
2324	4.5	0.7	318
0020	4.5	0.4	315
0124	4.5	0.7	172
0229	4.5	1.6	170
0338	4.5	2.5	160
0424	4.8	2.0	174
0546	5.0	1.1	182
0621	4.5	0.8	160
0721	5.0	1.1	155
0756	5.0	0.7	170
Three-Quarter			
1728	6.0	1.2	336
1931	6.0	1.3	340
2127	6.0	0.9	334
2323	6.0	1.0	300
0123	6.0	0.7	190
0337	6.0	2.4	172
			(Sheet 2 of 3)

Table 19 (Concluded)			
Hour CST	Depth ft	Speed fps	Direction deg
Three-Quarter (Continued)			
0545	7.0	1.0	184
Bottom[3]			
0809	8.9	0.7	182
0856	8.0	0.6	160
0936	8.6	0.5	100
1021	8.5	0.4	210
1123	8.5	0.2	140
1219	8.8	0.4	70
1324	8.7	0.1	110
1420	8.4	0.3	246
1526	9.0	0.5	275
1623	8.2	0.9	348
1727	8.5	0.6	286
1819	8.0	1.2	340
1930	8.0	1.1	342
2034	8.0	0.6	300
2126	8.0	0.6	322
2221	8.0	0.5	340
2322	8.0	0.8	270
0019	8.0	0.9	234
0122	8.0	0.7	215
0227	8.0	0.9	180
0336	8.0	2.1	176
0423	8.5	1.3	163
0544	9.0	0.8	186
0620	8.0	0.8	178
0720	9.0	1.0	160
0755	9.0	0.8	195

(Sheet 3 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 20
Current Data Observed at Station R4.0A, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0902	3.0	0.6	162
1003	3.0	0.6	200
1103	3.0	0.5	184
1207	3.0	0.3	088
1304	3.0	0.3	148
1402	3.0	0.4	240
1503	3.0	0.2	280
1602	3.0	0.3	034
1705	3.0	0.2	318
1802	3.0	0.3	322
1902	3.0	0.3	295
2004	3.0	0.4	340
2102	3.0	0.3	312
2222	3.0	0.4	320
2336	3.0	0.4	310
0002	3.0	0.3	290
0102	3.0	0.1	330
0202	3.0	0.4	100
0304	3.0	0.4	130
0402	3.0	0.5	076
0503	3.0	0.5	100
0604	3.0	0.6	146
0702	3.0	0.4	146
0802	3.0	0.5	120
Middepth			
0858	5.2	0.7	162
1020	5.0	0.6	152
1102	5.1	0.7	175
1201	5.0	0.3	159

(Sheet 1 of 3)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 20 (Continued)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
Middepth (Continued)			
1303	5.0	0.3	156
1401	5.0	0.4	224
1502	4.7	0.3	280
1601	5.0	0.6	8
1704	4.3	0.2	10
1801	4.7	0.3	308
1901	4.5	0.4	290
2002	4.6	0.2	338
2101	4.5	0.3	296
2221	4.5	0.5	310
2336	4.3	0.4	332
0001	4.5	0.4	306
0101	4.5	0.1	348
0201	4.3	0.3	100
0303	4.5	0.4	142
0401	5.5	0.4	042
0502	5.0	0.2	120
0602	5.0	0.5	130
0701	5.0	0.3	140
0801	5.0	0.5	128
Bottom[3]			
0855	8.5	0.6	158
1001	8.0	0.3	160
1100	8.2	0.7	126
1200	8.0	0.4	172
1301	8.0	0.2	150
1400	8.0	0.3	240
1501	7.8	0.2	312
1600	8.0	0.8	50
1700	7.5	0.4	314
			(Sheet 2 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 20 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1800	7.4	0.2	285
1900	7.1	0.4	280
2001	7.2	0.1	338
2100	7.0	0.4	300
2219	7.0	0.5	300
2334	6.5	0.2	252
0000	7.0	0.2	334
0100	7.0	0.1	40
0200	6.5	0.1	95
0302	7.0	0.1	130
0400	9.0	0.5	6
0501	8.0	0.4	108
0600	8.0	0.6	140
0700	8.0	0.3	130
0800	8.0	0.6	130

(Sheet 3 of 3)

Table 21
Current Data Observed at Station R4.0B, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0915	3.0	0.8	158
1016	3.0	0.3	140
1110	3.0	0.9	140
1210	3.0	0.5	180
1312	3.0	0.3	210
1408	3.0	0.4	300
1512	3.0	0.5	318
1609	3.0	0.3	292
1717	3.0	0.6	356
1809	3.0	0.8	310
1910	3.0	0.2	292
2013	3.0	0.5	320
2113	3.0	0.5	318
2328	3.0	0.3	310
0012	3.0	0.3	290
0112	3.0	0.3	90
0211	3.0	0.3	124
0313	3.0	0.5	108
0411	3.0	0.7	110
0513	3.0	0.3	199
0612	3.0	0.7	120
0712	3.0	0.6	158
0813	3.0	0.6	150
One-Quarter			
1311	4.2	0.2	210
1608	4.5	0.2	250
1716	5.1	0.5	340
1909	4.9	0.2	294

(Sheet 1 of 4)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 21 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
One-Quarter (Continued)			
2111	4.5	0.5	290
2327	4.0	0.1	304
0011	5.0	0.4	300
0111	4.0	0.3	126
0210	4.0	0.4	120
0512	4.5	0.3	196
0711	5.2	0.4	144
0812	3.7	0.7	150
Middepth			
0912	8.6	0.7	194
1015	7.0	0.4	130
1109	6.4	0.5	270
1209	6.7	0.3	280
1310	6.5	0.2	240
1407	7.3	0.4	270
1511	7.0	0.4	304
1607	6.5	0.5	265
1715	7.1	0.5	342
1808	6.4	0.3	294
1908	6.9	0.2	308
2012	5.5	0.3	289
2109	6.5	0.8	280
2326	5.7	0.4	317
0010	7.0	0.3	308
0110	6.0	0.2	124
0209	6.0	0.2	100
0312	5.7	0.3	110
0410	6.5	0.4	96
0511	6.5	0.3	176
0611	7.1	0.5	110
0709	7.2	0.4	124

(Sheet 2 of 4)

Table 21 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
0811	7.4	0.5	124
Three-Quarter			
1309	9.7	0.3	270
1406	10.9	0.3	170
1510	10.5	0.3	308
1606	9.7	0.5	250
1714	10.2	0.3	48
1907	8.9	0.4	350
2011	7.7	0.3	328
2106	9.0	0.8	250
2325	7.5	0.1	40
0009	10.5	0.3	338
0109	8.0	0.3	136
0206	8.0	0.1	110
0311	7.5	0.3	122
0409	9.7	0.3	72
0510	9.0	0.4	170
0610	10.6	0.6	136
0708	9.2	0.6	122
0810	11.1	0.6	116
Bottom[3]			
0910	15.2	0.6	154
1010	12.0	0.5	130
1107	10.8	0.6	280
1206	11.5	0.2	270
1306	11.0	0.4	252
1405	12.5	0.3	260
1509	12.0	0.3	284
1605	11.1	0.5	270
1713	12.2	0.2	130

(Sheet 3 of 4)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 21 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1807	10.9	0.2	240
1906	11.8	0.3	340
2010	9.0	0.4	320
2107	11.0	0.4	270
2323	9.5	0.2	318
0007	12.0	0.4	310
0108	10.0	0.1	130
0207	10.0	0.3	150
0310	9.5	0.1	110
0408	11.0	0.3	70
0509	11.0	0.3	212
0609	12.2	0.8	120
0707	11.2	0.5	113
0809	12.5	0.6	110

(Sheet 4 of 4)

Table 22
Current Data Observed at Station R4.0C, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
		Surface[2]	
0928	3.0	0.8	168
1025	3.0	0.4	154
1120	3.0	0.5	280
1218	3.0	0.4	240
1323	3.0	0.3	276
1416	3.0	0.2	100
1523	3.0	0.3	320
1618	3.0	0.4	320
1725	3.0	0.4	304
1817	3.0	0.4	350
1920	3.0	0.6	346
2032	3.0	0.3	308
2124	3.0	0.3	310
2211	3.0	0.4	220
2315	3.0	0.2	4
0025	3.0	0.3	20
0122	3.0	0.5	100
0220	3.0	0.4	108
0323	3.0	0.5	116
0420	3.0	0.5	170
0521	3.0	0.3	178
0622	3.0	0.4	210
0722	3.0	0.5	184
0821	3.0	0.5	150
		One-Quarter	
1322	4.0	0.4	276
1522	5.5	0.4	340
1617	4.1	0.4	320
1724	4.0	0.4	226

(Sheet 1 of 4)

[1] Direction from true north from which the current is flowing
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 22 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
One-Quarter (Continued)			
1919	5.1	0.4	332
2031	5.0	0.5	312
2123	4.0	0.5	305
2210	4.7	0.6	280
2314	4.8	0.2	300
0024	5.0	0.2	346
0121	4.7	0.2	8
0219	4.7	0.4	126
0322	4.5	0.3	120
0520	5.0	0.3	204
0621	3.7	0.5	170
0721	5.2	0.8	160
0820	3.7	0.6	142
Middepth			
0925	8.2	0.7	154
1023	7.3	0.6	300
1118	8.5	0.6	300
1216	8.0	0.5	200
1321	7.0	0.5	270
1415	7.5	0.3	79
1521	7.5	0.4	28
1616	8.0	0.1	120
1723	8.0	0.3	322
1816	7.1	0.3	358
1918	7.1	0.3	320
2030	7.0	0.5	300
2122	6.0	0.5	300
2209	6.7	0.4	290
2313	6.8	0.3	310
0022	7.0	0.2	100
0120	6.7	0.1	10

(Sheet 2 of 4)

Table 22 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
Middepth (Continued)			
0218	6.7	0.3	124
0321	6.5	0.4	132
0419	7.0	0.8	240
0519	7.0	0.7	140
0620	7.3	0.5	168
0720	7.5	0.7	138
0819	7.4	0.5	154
Three-Quarter			
1320	10.5	0.2	270
1414	11.2	0.4	40
1520	10.2	0.3	16
1614	12.3	0.1	190
1722	12.0	0.3	265
1815	10.6	0.1	310
1917	10.5	0.4	270
2029	10.5	0.1	292
2121	8.0	0.3	280
2208	9.5	0.2	330
2311	10.2	0.3	280
0021	10.5	0.3	200
0119	10.0	0.1	15
0217	8.7	0.4	118
0320	8.5	0.3	90
0418	10.5	0.9	320
0518	9.0	0.3	154
0619	11.0	0.5	156
0719	10.5	0.5	154
0818	11.1	0.7	182
Bottom[3]			
0921	14.4	0.5	180
			(Sheet 3 of 4)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 22 (Concluded)			
Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1022	12.5	0.8	144
1115	15.0	0.8	220
1214	14.0	0.3	210
1318	12.0	0.2	158
1413	13.0	0.3	45
151[illegible]	13.0	0.2	12
1613	14.4	0.2	220
1721	14.0	0.2	256
1814	12.2	0.1	270
1914	12.2	0.4	250
2028	12.0	0.1	229
2120	10.0	0.3	290
2207	11.5	0.2	40
2310	11.5	0.1	334
0018	12.0	0.1	350
0118	11.4	0.1	70
0216	11.4	0.2	68
0319	11.0	0.3	99
0417	12.0	1.0	90
0517	12.0	0.3	148
0618	12.6	0.4	210
0717	12.5	0.5	209
0817	12.5	0.6	146

(Sheet 4 of 4)

Table 23
Current Data Observed at Station R4.0D, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0937	3.0	0.5	112
1031	3.0	0.5	129
1130	3.0	0.5	270
1225	3.0	0.4	270
1330	3.0	0.3	350
1423	3.0	0.4	12
1532	3.0	0.4	280
1624	3.0	0.9	330
1733	3.0	0.4	304
1823	3.0	0.3	310
1926	3.0	0.4	356
2040	3.0	0.6	300
2132	3.0	0.4	312
2202	3.0	0.2	348
2303	3.0	0.3	6
0032	3.0	0.3	22
0129	3.0	0.3	88
0230	3.0	0.5	140
0332	3.0	0.3	140
0429	3.0	0.6	120
0527	3.0	0.5	156
0628	3.0	0.6	164
0729	3.0	0.7	158
0831	3.0	0.6	134
One-Quarter			
2133	4.5	0.5	290
Middepth			
0935	6.1	0.6	130

(Sheet 1 of 3)

[1] Direction from true north from which the current is flowing.
[2] Surface measurement obtained at 3.0 ft below top of water surface.

Table 23 (Continued)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
	Middepth (Continued)		
1030	6.3	0.6	290
1128	6.0	0.3	270
1223	6.3	0.5	280
1328	6.0	0.2	340
1422	6.7	0.3	38
1531	6.2	0.6	300
1623	6.0	0.2	330
1731	6.1	0.4	312
1822	6.0	0.3	339
1925	5.8	0.5	330
2039	5.5	0.3	310
2132	5.7	0.4	280
2201	5.5	0.4	312
2302	5.5	0.3	320
0031	5.5	0.5	310
0128	5.7	0.4	340
0229	5.4	0.6	86
0331	5.8	0.5	160
0428	6.2	0.5	140
0526	6.0	0.3	186
0627	6.3	0.3	160
0728	6.2	0.7	180
0830	6.3	0.6	122
	Three-Quarter		
2131	7.5	0.4	290
2301	7.0	0.2	340
0330	7.5	0.5	160
	Bottom[3]		
0933	10.2	0.3	140
1029	10.5	0.4	312
			(Sheet 2 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 23 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom (Continued)			
1125	10.0	0.3	250
1221	10.5	0.4	240
1327	10.0	0.2	100
1420	11.5	0.4	75
1529	10.4	0.5	356
1622	10.0	0.2	20
1730	10.2	0.3	330
1821	10.0	0.3	294
1923	9.5	0.5	252
2036	9.0	0.5	274
2130	9.5	0.3	290
2200	9.0	0.2	330
2300	9.0	0.1	358
0030	9.0	0.4	300
0126	9.5	0.3	110
0227	8.8	0.7	96
0328	9.5	0.2	170
0426	10.4	0.5	142
0525	10.0	0.2	180
0626	10.5	0.5	140
0726	10.5	0.7	300
0829	10.5	0.5	126

(Sheet 3 of 3)

Table 24
Current Data Observed at Sta 5.0A, 19-20 July 1990

Hour CST	Depth ft	Speed fps	Direction deg[1]
Surface[2]			
0749	3.0	0.5	300
0809	3.0	0.5	300
0902	3.0	0.7	334
1003	3.0	0.7	300
1103	3.0	0.9	298
1202	3.0	0.7	314
1303	3.0	0.7	314
1407	3.0	0.6	300
1503	3.0	0.5	292
1602	3.0	0.6	310
1703	3.0	0.7	306
1804	3.0	1.1	304
1903	3.0	1.1	300
2003	3.0	1.3	320
2103	3.0	1.1	322
2203	3.0	1.1	320
2303	3.0	0.7	308
0003	3.0	0.5	312
0102	3.0	0.4	334
0202	3.0	0.2	202
0302	3.0	0.4	136
0402	3.0	0.2	146
0502	3.0	0.3	168
0602	3.0	0.3	050
0702	3.0	0.3	006
0802	3.0	0.5	004
One-Quarter			
1102	5.0	0.9	280
1202	5.6	0.7	308
			(Sheet 1 of 4)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 24 (Continued)

Hour CST	Depth ft	Speed fps	Direction deg[1]
One-Quarter (Continued)			
1302	6.8	0.8	318
1406	6.8	0.7	302
1502	6.2	0.5	300
1601	5.2	0.5	312
1702	8.0	0.7	314
1803	6.3	1.0	308
1902	6.0	1.2	296
2002	5.8	1.0	316
2102	5.3	1.1	324
2202	5.4	1.1	318
2302	5.8	0.9	312
0002	6.0	0.6	304
Middepth			
0747	7.6	0.5	346
0807	8.5	0.3	268
0901	7.6	0.5	334
1002	8.2	0.5	292
1102	10.0	0.8	268
1201	11.2	0.7	242
1301	13.6	0.7	318
1405	13.5	0.8	304
1501	12.4	0.3	334
1601	10.5	0.5	328
1702	16.0	0.6	320
1802	12.6	0.9	304
1902	12.0	1.2	322
2001	11.7	0.9	312
2102	10.6	1.1	308
2201	10.8	1.1	290
2302	11.6	1.0	304
0001	11.9	0.6	302

(Sheet 2 of 4)

Table 24 (Continued)			
Hour CST	Depth ft	Speed fps	Direction deg
	Middepth (Continued)		
0101	8.0	0.3	352
0201	7.9	0.1	192
0301	7.3	0.2	126
0401	6.8	0.3	150
0501	7.8	0.2	142
0601	7.8	0.3	108
0701	7.1	0.3	016
0801	6.9	0.5	336
	Three-Quarter		
1201	16.8	0.6	330
1301	20.4	0.5	320
1404	20.3	0.5	292
1500	18.6	0.3	036
1600	15.7	0.4	336
1701	24.0	0.3	340
1801	18.9	0.9	310
1901	18.0	0.8	310
2001	17.6	0.8	288
2101	15.9	0.9	302
2200	16.2	0.9	290
2301	17.4	0.6	352
0001	17.9	0.6	324
	Bottom[3]		
0745	13.2	0.3	254
0805	15.0	0.3	220
0900	13.2	0.2	098
1001	14.4	0.2	310
1100	18.0	0.3	240
1200	20.4	0.2	220
1300	25.2	0.2	332
			(Sheet 3 of 4)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 24 (Concluded)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
Bottom (Continued)			
1400	27.0	0.4	290
1500	22.8	0.3	080
1600	19.0	0.3	340
1700	30.0	0.2	318
1800	23.2	0.5	320
1900	22.0	0.3	230
2000	21.4	0.6	306
2100	19.2	0.7	274
2200	19.6	0.8	282
2300	18.6	0.3	186
0000	21.8	0.2	336
0100	14.0	0.2	340
0200	13.8	0.0	060
0300	12.6	0.4	074
0400	11.6	0.2	140
0500	13.6	0.2	162
0600	13.6	0.5	128
0700	12.2	0.3	012
0800	11.8	0.4	254

(Sheet 4 of 4)

Table 25
Current Data Observed at Station R5.0D, 19-20 July 1990

Hour CST	Depth Ft	Speed fps	Direction deg[1]
Surface[2]			
0800	3.0	0.3	312
0815	3.0	0.6	270
0908	3.0	0.5	268
1010	3.0	1.1	284
1113	3.0	0.8	288
1209	3.0	1.0	296
1309	3.0	0.8	310
1413	3.0	0.7	276
1509	3.0	0.3	208
1609	3.0	0.3	270
1709	3.0	0.6	302
1809	3.0	0.6	306
1911	3.0	0.8	310
2008	3.0	0.6	342
2110	3.0	0.6	322
2209	3.0	1.0	274
2311	3.0	1.0	276
0011	3.0	0.5	312
0110	3.0	0.3	334
0209	3.0	0.3	272
0309	3.0	0.6	142
0409	3.0	1.2	114
0511	3.0	0.7	118
0607	3.0	1.0	116
0707	3.0	1.0	118
0808	3.0	0.6	152
One-Quarter			
0908	5.0	0.5	278
0109	5.6	0.3	322

(Sheet 1 of 3)

1 Direction from true north from which the current is flowing.
2 Surface measurement obtained at 3.0 ft below top of water surface.

Table 25 (Continued)			
Hour CST	**Depth ft**	**Speed fps**	**Direction deg**
	Middepth		
0759	12.2	0.2	074
0814	11.4	0.0	288
0907	10.1	0.4	264
1009	8.4	0.7	276
1112	8.3	0.8	296
1200	7.7	1.1	328
1308	7.5	1.0	312
1412	5.3	0.3	296
1508	5.8	0.5	222
1608	6.0	0.5	076
1708	6.7	0.6	322
1808	7.3	0.6	326
1910	7.7	0.9	290
2007	7.8	0.5	355
2109	7.7	0.7	006
2208	6.9	0.5	272
2310	6.6	0.5	266
0010	8.0	0.2	064
0109	11.2	0.3	304
0208	7.3	0.2	342
0308	7.8	1.0	158
0408	6.9	1.1	118
0510	8.0	0.8	132
0606	8.7	1.2	138
0706	8.9	1.1	128
0807	8.0	0.7	156
	Three-Quarter		
0906	15.1	0.3	240
0108	16.8	0.3	346

(Sheet 2 of 3)

Table 25 (Concluded)

Hour CST	Depth ft	Speed fps	Direction deg
Bottom[3]			
0758	22.4	0.2	064
0813	20.8	0.3	330
0906	18.2	0.2	240
1008	14.8	0.3	320
1111	14.6	0.5	328
1207	13.4	0.6	332
1307	13.0	0.6	324
1412	8.6	0.3	324
1507	9.6	0.4	210
1607	10.0	0.4	062
1707	11.4	0.3	318
1807	12.6	0.7	328
1909	13.4	1.0	290
2006	13.6	0.5	340
2108	13.4	0.5	004
2207	11.8	0.3	306
2309	11.2	0.2	314
0009	14.0	0.7	004
0108	20.4	0.4	320
0207	12.6	0.2	010
0307	13.6	0.6	150
0407	11.8	1.2	140
0509	14.0	1.1	140
0605	15.4	1.1	132
0705	15.8	1.2	134
0805	14.0	0.3	098

(Sheet 3 of 3)

[3] Bottom measurement obtained at 2.0 ft above actual bottom.

Table 26
Salinity Concentrations and Suspended Sediments Observed at Station R1.0A, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0704	3.0	26.94	16
1204	3.0	26.89	8
1307	3.0	27.02	8
1404	3.0	26.64	10
1506	3.0	24.43	4
1603	3.0	26.37	24
1702	3.0	25.10	33
1804	3.0	23.81	69
1905	3.0	22.02	103
2004	3.0	19.07	53
2103	3.0	18.20	35
2204	3.0	17.15	14
2303	3.0	15.74	8
0003	3.0	16.43	6
0103	3.0	22.53	27
0203	3.0	24.25	24
0304	3.0	25.91	47
0405	3.0	26.14	19
0506	3.0	26.70	15
0604	3.0	26.37	13
0704	3.0	26.09	12
0803	3.0	26.16	10
Middepth			
0701	14.2	27.12	17
1202	13.6	27.20	14
1304	14.5	27.25	10
1402	13.5	26.83	15
1506	13.9	26.79	24
1602	13.5	26.63	38
1701	12.4	25.14	34

(Sheet 1 of 3)

Table 26 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1802	13.5	24.27	81
1903	13.0	22.52	101
2003	13.0	19.67	67
2102	13.5	19.81	82
2201	13.5	18.76	24
2301	14.0	18.10	10
0001	14.5	18.29	10
0101	14.5	23.15	66
0201	14.5	24.89	35
0301	14.5	25.95	54
0402	14.7	26.09	30
0602	14.7	26.38	18
0506	14.5	26.36	17
0702	14.5	26.06	19
0802	14.5	26.04	10
Bottom			
0700	26.5	26.98	19
1200	25.3	27.31	25
1300	27.0	27.37	21
1400	25.0	26.87	14
1500	25.5	26.88	22
1600	25.0	26.75	50
1700	24.8	25.37	65
1800	25.0	24.29	70
1900	24.0	22.46	109
2000	24.0	20.41	91
2100	25.0	19.76	85
2200	25.0	19.11	51
2300	26.0	21.55	18
2400	27.0	20.51	55
0100	27.0	23.00	87

(Sheet 2 of 3)

Table 26 (Concluded)			
Hour CST	Depth ft	Salinity pppt	Suspended Sediment mg/l
Bottom (Continued)			
0200	27.0	25.17	90
0300	27.0	25.92	59
0402	27.5	25.69	27
0500	27.0	26.39	23
0600	27.5	26.67	22
0700	27.0	26.18	21
0800	27.0	26.04	9

(Sheet 3 of 3)

Table 27
Salinity Concentrations and Suspended Sediments Observed at Station R1.0B, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0756	3.0	26.68	18
1213	3.0	27.17	12
1321	3.0	27.08	8
1409	3.0	26.86	7
1521	3.0	25.07	10
1613	3.0	25.87	14
1712	3.0	25.36	23
1812	3.0	23.30	22
1916	3.0	22.02	38
2019	3.0	19.56	26
2116	3.0	18.12	23
2215	3.0	16.21	9
2314	3.0	16.17	12
0016	3.0	16.22	8
0116	3.0	19.36	12
0216	3.0	25.96	36
0316	3.0	26.12	30
0417	3.0	26.41	21
0518	3.0	26.69	13
0612	3.0	26.58	15
0714	3.0	25.99	14
0816	3.0	25.91	11
One-Quarter			
0754	9.0	26.72	20
1213	9.6	27.06	10
1319	10.0	27.06	9
1408	10.2	26.99	12
1520	10.0	26.71	26
1612	9.7	26.30	21
1711	10.5	25.47	23

(Sheet 1 of 4)

Table 27 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
One-Quarter (Continued)			
1811	10.2	24.26	30
1915	10.2	21.76	30
2018	10.5	20.07	26
2115	10.2	19.23	40
2214	10.0	18.22	10
2313	10.5	19.74	10
0015	10.5	17.67	9
0115	10.5	23.82	23
0215	10.5	25.89	42
0315	11.0	26.13	29
0415	10.5	26.58	24
0517	10.5	26.56	13
0611	10.5	26.71	18
0713	10.5	26.00	16
0815	10.0	25.96	10
Middepth			
0753	18.0	26.91	17
1211	19.3	27.40	15
1310	20.0	27.46	11
1408	20.5	27.00	13
1519	20.0	27.07	31
1610	19.5	26.77	40
1710	21.0	25.80	111
1810	20.5	24.43	74
1913	20.5	22.63	47
2017	21.0	20.76	34
2114	20.5	22.08	83
2212	20.0	20.54	21
2312	21.0	20.59	9
0014	21.0	19.17	10
0113	21.0	24.10	26

(Sheet 2 of 4)

Table 27 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
0213	21.0	26.01	41
0314	22.0	26.11	31
0414	21.0	26.44	24
0515	21.0	26.56	14
0610	21.0	26.49	14
0712	21.0	26.13	15
0814	20.0	25.86	13
Three-Quarter			
0751	27.0	26.85	20
1209	28.9	27.37	18
1315	30.0	27.46	13
1407	30.7	27.04	21
1517	30.0	26.96	36
1609	29.2	26.83	2
1709	31.5	25.83	86
1809	30.7	24.75	108
1912	30.7	22.92	53
2017	31.5	20.97	27
2112	30.7	21.83	95
2211	30.0	22.61	37
2311	31.5	21.16	19
0013	31.5	20.25	26
0111	31.5	24.37	49
0212	31.5	25.97	49
0313	33.0	26.07	52
0413	31.5	26.37	30
0514	31.5	26.54	19
0609	31.5	26.51	15
0711	31.5	26.28	15
0813	30.0	26.02	9

(Sheet 3 of 4)

Table 27 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom			
1207	37.4	27.56	23
1312	38.1	27.49	15
1405	39.0	27.13	21
1515	38.0	26.76	37
1606	37.0	26.92	42
1708	40.0	25.87	69
1808	39.0	24.86	135
1910	39.0	22.95	50
2015	40.0	21.03	73
2111	39.0	24.04	214
2210	38.0	22.68	38
2309	40.0	21.19	21
0012	40.0	21.44	79
0110	40.0	23.90	59
0210	40.0	26.01	71
0312	42.0	26.06	69
0412	40.0	26.30	23
0511	40.0	26.61	20
0608	40.0	26.51	14
0709	40.0	26.34	12
0811	38.0	25.96	15

(Sheet 4 of 4)

Table 28
Salinity Concentrations and Suspended Sediments Observed at Station R1.0C, 19-20 July 1990

Hour CST	Depth ft	Suspended ppt	Suspended Sediment mg/l
Surface			
0813	3.0	27.10	15
1230	3.0	26.79	6
1336	3.0	26.95	7
1419	3.0	26.71	10
1535	3.0	25.34	9
1625	3.0	25.53	12
1721	3.0	25.82	28
1822	3.0	24.50	24
1925	3.0	21.22	13
2030	3.0	19.87	14
2130	3.0	17.98	9
2225	3.0	17.29	10
2324	3.0	16.03	8
0029	3.0	16.40	8
0128	3.0	17.36	8
0232	3.0	26.16	23
0331	3.0	26.20	21
0427	3.0	26.25	20
0529	3.0	26.41	27
0623	3.0	26.30	14
0725	3.0	26.08	16
0827	3.0	26.18	11
One-Quarter			
0813	10.4	27.16	18
1229	12.5	27.08	12
1335	12.5	26.91	9
1419	12.0	26.88	11
1534	12.5	26.80	10
1624	12.1	26.67	34
1720	12.5	26.02	46

(Sheet 1 of 4)

Table 28 (Continued)			
Hour CST	**Depth ft**	**Salinity ppt**	**Suspended Sediment mg/l**
One-Quarter (Continued)			
1821	12.2	25.18	41
1924	10.5	22.04	21
2029	10.7	20.45	24
2128	12.0	19.40	16
2224	11.7	17.98	11
2323	12.0	19.04	7
0028	11.8	17.69	11
0127	12.0	20.90	10
0230	11.7	26.09	30
0330	10.7	26.28	27
0427	11.7	26.31	41
0527	12.0	26.54	19
0622	12.5	26.52	15
0724	12.5	26.54	14
0825	12.5	26.27	11
Middepth			
0810	20.7	27.19	19
1228	25.0	27.30	13
1334	25.0	27.23	8
1418	24.0	26.77	11
1532	25.0	26.74	17
1623	24.2	26.67	39
1713	25.0	26.06	46
1820	24.5	25.75	45
1924	21.0	23.32	30
2027	21.5	22.83	33
2127	24.0	21.20	23
2223	23.5	20.08	16
2321	24.0	19.99	16
0027	23.7	18.68	13
0126	24.0	25.73	18

(Sheet 2 of 4)

Table 28 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
	Middepth (Continued)		
0229	23.5	26.10	27
0328	21.5	26.17	35
0425	23.5	26.15	24
0526	24.0	26.73	18
0621	25.0	26.73	17
0723	25.0	26.55	14
0824	25.0	26.42	14
	Three-Quarter		
1225	37.5	27.41	11
1330	37.5	27.34	11
1417	36.0	27.00	16
1530	37.5	26.68	24
1621	36.3	26.96	79
1718	37.5	26.23	64
1818	36.7	25.78	55
2126	36.0	22.03	40
2222	35.0	20.85	21
2320	36.0	20.59	18
0025	35.5	21.68	21
0125	36.0	25.97	27
0226	35.2	26.25	35
0423	35.2	26.12	24
0523	36.0	26.64	22
0619	37.5	26.67	53
0721	37.5	26.58	15
0823	37.5	26.57	16
	Bottom		
0806	39.5	27.35	18
1223	48.0	27.64	14
1327	48.0	27.43	15
1415	46.0	27.17	22

(Sheet 3 of 4)

Table 28 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
1528	48.0	27.09	30
1620	46.5	26.69	79
1716	48.0	26.33	73
1817	47.0	25.73	56
1921	40.0	24.11	42
2025	41.0	23.92	84
2125	46.0	22.43	67
2220	45.0	21.15	48
2318	46.0	21.70	19
0024	47.5	24.05	145
0123	46.0	25.87	27
0227	45.0	26.16	33
0325	41.0	26.21	38
0422	45.0	26.29	28
0522	46.0	26.58	21
0617	48.0	26.67	21
0720	48.0	26.64	17
0822	48.0	26.62	17

(Sheet 4 of 4)

Table 29
Salinity Concentrations and Suspended Sediments Observed at Station R1.0D, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0829	3.0	26.99	15
1238	3.0	26.57	12
1351	3.0	26.11	12
1426	3.0	26.47	12
1552	3.0	26.15	11
1634	3.0	26.64	34
1730	3.0	26.05	16
1831	3.0	24.53	12
1936	3.0	23.10	11
2047	3.0	20.02	10
2140	3.0	19.82	14
2236	3.0	17.25	8
2334	3.0	16.26	8
0041	3.0	16.65	8
0140	3.0	18.77	11
0244	3.0	25.24	19
0342	3.0	25.61	14
0440	3.0	25.91	17
0540	3.0	25.90	21
0632	3.0	25.76	17
0733	3.0	26.04	14
0838	3.0	26.27	10
One-Quarter			
0828	11.7	27.19	15
1349	11.5	26.57	16
1549	11.7	26.82	18
1729	10.1	26.09	22
1830	12.0	25.41	16
1935	11.8	23.72	18
2046	11.5	20.30	10

Table 29 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
One-Quarter (Continued)			
2139	11.5	21.12	16
2235	11.5	18.70	12
2334	11.5	18.04	8
0040	12.0	19.02	13
0139	12.0	22.75	13
0243	10.5	25.90	30
0340	11.0	25.82	18
0438	12.0	25.98	20
0538	12.0	26.71	36
0630	12.0	26.57	19
0732	12.0	26.39	18
0836	12.0	26.60	7
Middepth			
0826	23.5	27.51	16
1237	21.8	26.82	9
1347	23.3	26.66	10
1425	23.0	26.75	10
1546	23.5	26.72	28
1637	26.0	26.78	60
1728	20.5	26.32	43
1829	24.0	25.81	32
1933	23.7	24.92	34
2045	23.0	22.53	31
2138	23.0	21.30	22
2234	23.0	19.69	11
2332	23.0	18.63	10
0038	24.0	21.83	15
0138	24.0	26.21	38
0241	21.0	26.11	35
0339	22.0	26.19	28
0437	24.0	26.30	27

(Sheet 2 of 4)

Table 29 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
	Middepth (Continued)		
0537	24.0	26.57	24
0629	24.0	26.64	16
0730	24.0	26.64	23
0835	24.0	26.80	9
	Three-Quarter		
0825	35.2	27.65	19
1345	34.5	26.70	9
1542	35.2	26.70	41
1728	30.7	26.33	58
1828	36.0	25.98	76
1932	35.4	25.70	71
2044	34.5	22.77	41
2137	34.5	21.37	32
2232	34.5	19.95	18
2330	34.5	18.76	9
0037	36.0	25.17	51
0137	36.0	26.36	51
0240	31.5	26.11	36
0338	33.0	26.33	42
0436	36.0	26.37	30
0536	36.0	26.74	19
0628	36.0	26.69	20
0729	36.0	26.87	18
0834	36.0	26.76	16
	Bottom		
0822	45.0	27.73	33
1236	43.6	27.37	16
1342	44.0	27.39	*
1423	44.0	26.64	21
1541	45.0	26.88	57
1630	42.0	26.75	64

(Sheet 3 of 4)

Table 29 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
1726	41.0	26.41	80
1827	46.0	26.08	109
1931	45.5	25.85	89
2043	44.0	23.05	[illegible]
2136	44.0	20.70	51
2231	44.0	20.52	36
2329	44.0	22.00	34
0035	46.0	25.27	81
0136	46.0	26.29	49
0238	40.0	26.18	35
0337	42.0	26.28	32
0435	46.0	26.57	34
0535	46.0	26.51	21
0628	46.0	26.60	19
0728	46.0	26.92	26
0833	46.3	26.70	19

(Sheet 4 of 4)

Table 30
Salinity Concentrations and Suspended Sediments Observed at Station R2.0A, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0704	3.0	24.06	15
0803	3.0	24.38	13
0902	3.0	24.76	18
1003	3.0	25.20	10
1102	3.0	25.04	11
1203	3.0	25.32	13
1302	3.0	25.31	8
1403	3.0	25.27	7
1503	3.0	22.22	4
1603	3.0	19.88	10
1703	3.0	18.54	15
1803	3.0	10.98	16
1902	3.0	15.00	15
2005	3.0	14.67	10
2103	3.0	13.99	10
2203	3.0	10.68	10
2305	3.0	9.09	8
0004	3.0	10.47	10
0102	3.0	12.67	4
0202	3.0	18.07	12
0302	3.0	18.28	26
0402	3.0	22.84	14
0503	3.0	24.41	14
0602	3.0	20.91	13
0703	3.0	22.88	15
0804	3.0	22.99	12
Middepth			
0702	16.4	26.51	26
0801	16.2	26.30	11
0901	16.3	26.63	15

(Sheet 1 of 3)

Table 30 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1002	16.3	26.26	14
1101	15.6	26.89	14
1202	15.1	26.53	13
1301	15.0	26.20	11
1402	14.9	25.80	15
1502	14.4	25.16	3
1602	14.6	22.85	13
1702	14.7	20.66	15
1802	14.7	17.43	7
1901	14.7	16.79	16
2004	14.5	15.77	19
2102	14.8	14.51	12
2202	14.7	13.80	12
2304	14.8	13.62	11
0003	15.4	13.17	10
0101	15.7	17.55	17
0201	16.0	18.99	20
0301	16.2	18.12	7
0401	16.3	23.83	20
0502	16.3	24.69	30
0601	16.2	25.32	34
0702	16.2	25.46	25
0803	15.6	24.34	17
Bottom			
0701	30.8	26.64	27
0800	30.4	26.80	43
0900	30.6	26.77	23
1001	30.7	26.82	18
1100	29.2	26.85	20
1201	28.2	26.65	14
1300	28.0	26.65	16

(Sheet 2 of 3)

Table 30 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
1401	27.8	26.13	16
1501	26.8	25.57	14
1601	27.3	24.34	25
1701	27.3	21.63	21
1801	27.4	19.92	13
1900	27.4	19.25	23
2003	27.0	16.88	15
2101	27.5	15.89	16
2201	27.4	15.80	20
2303	27.6	14.90	18
0002	26.8	14.54	12
0100	29.4	18.61	17
0200	30.0	19.06	32
0300	30.3	18.19	24
0400	30.5	23.80	39
0501	30.6	25.24	44
0600	30.3	25.67	38
0701	30.3	25.75	29
0802	29.3	25.87	29

(Sheet 3 of 3)

Table 31
Salinity Concentrations and Suspended Sediments Observed at Station 2.0B, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0716	3.0	24.29	8
0814	3.0	24.61	10
0914	3.0	24.57	8
1013	3.0	25.47	15
1112	3.0	26.08	45
1213	3.0	25.14	7
1314	3.0	25.25	4
1413	3.0	25.20	5
1514	3.0	21.74	18
1613	3.0	18.50	7
1713	3.0	16.84	9
1814	3.0	17.04	15
1913	3.0	15.83	10
2022	3.0	13.18	53
2113	3.0	11.93	37
2214	3.0	10.25	11
2315	3.0	8.97	6
0015	3.0	11.15	7
0114	3.0	15.46	6
0213	3.0	17.04	19
0313	3.0	18.33	27
0413	3.0	24.59	30
0514	3.0	25.77	34
0612	3.0	25.94	20
0712	3.0	23.96	14
0818	3.0	23.05	11
One-Quarter			
0813	4.6	24.80	*
0913	5.7	25.03	9
1012	4.0	25.38	4

(Sheet 1 of 5)

Table 31 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
One-Quarter (Continued)			
1111	4.3	25.60	10
1212	4.5	25.14	6
1313	4.5	25.11	8
1412	4.5	25.28	7
1513	7.1	22.53	8
1612	6.7	19.26	9
1712	5.5	18.34	8
1813	4.2	17.10	13
1912	4.2	15.84	9
2021	4.0	13.38	6
2112	4.0	11.92	10
2213	4.0	10.55	12
2314	4.0	9.40	8
0014	4.1	11.59	11
0113	4.9	15.89	8
0212	4.9	17.30	10
0312	5.2	18.38	48
0412	4.9	24.53	12
0513	5.4	24.66	25
0611	4.7	25.94	29
0711	6.1	25.21	19
0817	5.0	23.09	13
Middepth			
0714	9.0	26.84	26
0812	9.2	26.54	19
0912	11.4	26.08	11
1011	8.8	26.02	11
1110	8.6	26.10	24
1211	9.0	25.92	10
1312	8.9	25.56	17
1411	9.0	25.20	7

(Sheet 2 of 5)

Table 31 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1512	14.2	23.94	9
1611	13.5	21.43	6
1711	11.1	19.22	10
1812	8.4	17.21	11
1911	8.3	16.57	11
2020	8.0	14.18	5
2111	8.0	12.45	8
2212	8.0	11.57	9
2313	7.9	11.29	9
0013	8.2	12.71	10
0112	9.8	17.42	10
0211	9.8	17.84	6
0311	10.4	18.51	37
0411	9.7	24.56	25
0512	10.8	25.75	28
0610	9.4	25.94	32
0710	12.3	25.99	19
0816	10.0	23.46	11
Three-Quarter			
0713	12.5	26.80	30
0811	13.8	27.01	33
0911	17.1	26.97	25
1010	13.4	26.45	14
1109	12.9	26.74	34
1210	13.5	25.97	10
1311	13.4	25.87	9
1410	13.5	25.31	8
1511	21.3	26.03	28
1610	20.1	23.76	24
1710	16.7	19.38	11
1811	12.6	17.69	13

Table 31 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Three-Quarter (Continued)			
1910	12.5	17.42	10
2019	12.0	15.09	19
2110	12.0	13.49	10
2211	12.0	12.02	11
2312	11.9	12.95	12
0012	12.3	13.90	9
0111	14.7	17.87	11
0210	14.7	18.16	11
0310	15.6	18.63	49
0410	14.6	24.49	31
0511	16.2	25.79	33
0609	14.1	25.95	27
0709	18.5	26.05	28
0815	15.0	26.26	20
Bottom			
0712	16.1	26.88	28
0809	16.4	26.88	25
0910	20.8	26.91	27
1009	15.6	27.12	37
1108	15.3	26.97	25
1209	16.0	26.58	9
1310	15.8	26.64	16
1409	16.0	25.74	9
1510	26.5	26.27	31
1609	24.8	25.80	53
1709	20.2	19.20	7
1810	14.8	17.75	*
1909	14.6	17.80	11
2018	14.0	14.93	13
2109	14.0	13.67	11
2210	14.0	12.46	16

(Sheet 4 of 5)

Table 31 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
2311	13.8	13.81	13
0011	14.3	14.08	11
0110	17.5	18.16	23
0209	17.6	18.29	11
0309	18.7	18.54	25
0409	17.4	24.45	32
0510	19.5	25.78	32
0608	16.8	25.96	33
0708	22.5	25.98	22
0814	18.0	26.06	19

(Sheet 5 of 5)

Table 32
Salinity Concentrations and Suspended Sediments Observed at Station R2.0C, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0729	3.0	26.98	28
0825	3.0	25.10	11
0925	3.0	24.82	14
1022	3.0	25.12	6
1122	3.0	25.73	15
1224	3.0	25.56	8
1325	3.0	25.20	7
1424	3.0	24.31	5
1524	3.0	23.56	9
1621	3.0	19.45	11
1723	3.0	17.03	12
1823	3.0	10.59	19
1924	3.0	14.66	15
2037	3.0	12.40	18
2136	3.0	11.02	23
2223	3.0	9.29	15
2325	3.0	9.10	8
0024	3.0	12.21	7
0124	3.0	14.62	7
0223	3.0	15.29	6
0323	3.0	19.99	6
0423	3.0	25.12	33
0525	3.0	26.09	31
0621	3.0	26.08	20
0721	3.0	26.20	15
0827	3.0	24.29	10
One-Quarter			
0727	11.4	26.92	21
0824	11.4	26.80	16
0924	9.3	26.67	12

(Sheet 1 of 5)

Table 32 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
One-Quarter (Continued)			
1021	11.5	26.38	19
1121	11.6	26.95	19
1223	11.7	26.02	7
1324	11.4	25.62	10
1423	7.8	24.75	6
1523	7.2	24.80	11
1620	7.5	22.62	7
1722	7.3	18.07	15
1822	7.5	16.18	19
1923	7.4	14.79	20
2036	11.1	12.93	15
2134	10.9	11.59	12
2222	11.2	12.02	7
2324	11.0	12.94	10
0023	11.2	15.45	14
0123	9.9	16.02	7
0222	11.7	18.54	19
0322	12.0	20.25	109
0422	10.7	25.01	60
0524	11.3	26.03	43
0620	10.7	26.16	58
0720	10.2	26.34	35
0826	9.7	25.74	13
Middepth			
0822	22.7	27.03	8
0923	18.5	26.97	15
1021	23.3	26.96	11
1120	23.0	26.89	10
1222	23.5	26.87	10
1323	22.8	26.75	12
1422	15.7	26.46	5

(Sheet 2 of 5)

Table 32 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1522	14.4	25.65	13
1619	15.1	24.07	11
1721	14.5	19.13	12
1821	15.0	16.99	17
1922	14.7	17.26	26
2035	22.2	16.92	17
2133	21.8	14.75	12
2221	22.3	15.03	17
2323	22.0	15.49	13
0022	22.3	17.84	9
0122	19.8	19.37	17
0221	23.3	19.21	25
0321	23.9	20.27	60
0421	21.4	25.00	62
0523	22.5	25.94	45
0619	21.4	26.14	40
0719	20.3	26.33	21
0825	19.3	25.95	12
Three-Quarter			
0724	34.7	27.04	34
0821	33.5	27.08	21
0922	27.7	26.94	19
1019	35.9	26.86	16
1119	34.5	27.05	27
1221	35.1	26.97	19
1322	34.2	26.88	15
1421	23.5	26.74	6
1521	21.6	25.94	13
1618	22.8	24.75	13
1720	21.8	21.60	25
1820	22.5	19.21	30
			(Sheet 3 of 5)

Table 32 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Three-Quarter (Continued)			
1921	22.1	18.58	30
2034	33.3	19.88	16
2132	32.9	19.34	29
2220	33.5	18.00	19
2322	33.0	21.18	28
0021	33.4	20.10	12
0121	29.7	19.65	28
0220	35.0	19.92	37
0320	35.5	20.19	76
0420	32.1	24.99	62
0522	33.8	25.94	53
0618	32.1	26.11	40
0718	30.5	26.25	24
0824	29.0	26.31	19
Bottom			
0723	43.7	27.05	63
0819	43.4	27.11	63
0921	35.0	27.03	16
1017	44.6	27.00	54
1118	44.0	27.07	43
1220	44.9	27.01	41
1321	43.6	26.93	25
1420	29.4	26.85	13
1520	26.8	26.73	36
1617	28.2	26.37	44
1719	27.0	24.80	26
1819	28.0	22.30	27
1920	27.3	20.68	33
2033	42.4	21.30	31
2131	41.6	21.83	33
2219	42.5	21.66	58

(Sheet 4 of 5)

Table 32 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
2321	42.0	22.19	52
0020	42.5	22.14	40
0120	37.5	19.96	62
0219	44.5	20.06	42
0319	45.8	20.06	27
0419	40.8	24.89	85
0521	43.0	25.98	50
0617	40.8	26.10	41
0717	38.6	26.19	27
0823	36.6	26.29	27

(Sheet 5 of 5)

Table 33
Salinity Concentrations and Suspended Sediments Observed at Station R2.0D, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0738	3.0	27.01	30
0832	3.0	27.00	15
0934	3.0	25.45	9
1028	3.0	25.17	9
1130	3.0	25.51	9
1232	3.0	25.43	11
1332	3.0	24.59	10
1432	3.0	24.36	7
1532	3.0	23.11	7
1628	3.0	20.07	8
1734	3.0	16.05	14
1830	3.0	11.08	18
1935	3.0	15.01	20
2049	3.0	14.79	15
2125	3.0	14.03	6
2232	3.0	10.24	7
2332	3.0	10.16	5
0032	3.0	11.86	7
0136	3.0	15.58	35
0232	3.0	18.61	33
0332	3.0	21.45	91
0437	3.0	25.51	44
0533	3.0	26.09	42
0628	3.0	26.23	43
0728	3.0	26.53	25
0834	3.0	26.41	19
Middepth			
0736	8.0	27.00	36
0831	7.9	27.06	27

(Sheet 1 of 3)

Table 33 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
0933	8.2	27.05	15
1027	8.1	26.17	12
1129	8.0	25.73	13
1231	7.9	26.70	36
1332	7.8	26.05	8
1431	7.7	26.60	6
1531	7.6	25.38	9
1627	7.5	23.57	12
1733	7.3	20.17	22
1829	7.2	17.48	23
1934	7.1	15.24	22
2048	7.0	14.99	15
2124	6.9	14.34	11
2231	7.1	11.77	13
2331	7.4	11.85	7
0031	7.7	14.13	11
0135	7.9	16.14	43
0231	7.9	18.61	36
0331	8.1	21.03	55
0436	8.0	25.44	38
0532	8.0	26.06	42
0627	8.0	26.20	39
0727	7.9	26.31	30
0833	8.0	26.42	28
Bottom			
0735	14.0	27.06	24
0830	13.8	27.04	26
0932	14.4	27.04	18
1026	14.2	26.84	10
1128	14.0	27.09	10
1230	13.8	26.90	19
			(Sheet 2 of 3)

Table 33 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
1330	13.6	26.89	15
1430	13.5	26.79	8
1530	13.2	26.10	21
1626	12.9	25.15	29
1732	12.6	20.95	39
1828	12.4	17.85	37
1933	12.2	15.24	18
2047	12.0	15.06	14
2123	11.8	14.36	12
2230	12.2	12.11	19
2330	12.8	12.82	12
0030	13.4	15.46	22
0134	13.7	16.26	19
0230	13.7	18.63	40
0330	14.2	20.95	9
0435	14.0	25.50	43
0531	13.9	26.11	49
0626	14.0	26.21	37
0726	13.8	26.36	25
0832	14.0	26.50	24

(Sheet 3 of 3)

Table 34
Salinity Concentrations and Suspended Sediments Observed at Station R3.0A, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0730	3.0	18.25	29
0827	3.0	18.54	14
0914	3.0	19.95	30
1005	3.0	20.18	33
1104	3.0	22.24	17
1204	3.0	22.66	15
1305	3.0	20.82	14
1403	3.0	18.89	9
1504	3.0	15.55	12
1603	3.0	17.54	49
1704	3.0	15.32	47
1802	3.0	14.22	52
1904	3.0	12.64	25
2002	3.0	12.37	64
2104	3.0	11.58	41
2203	3.0	10.90	19
2304	3.0	12.63	17
0003	3.0	12.68	13
0103	3.0	10.91	8
0203	3.0	9.64	11
0304	3.0	15.67	57
0404	3.0	15.32	24
0521	3.0	17.88	34
0605	3.0	19.96	46
0704	3.0	19.46	26
0731	3.0	22.11	67
Middepth			
0730	5.0	17.57	23
0825	5.0	25.78	73

(Sheet 1 of 3)

Table 34 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
0912	5.0	26.03	73
1003	5.0	25.62	21
1102	5.3	25.07	18
1202	5.3	23.31	12
1303	5.5	22.13	12
1401	5.3	21.26	10
1502	5.2	19.47	13
1602	5.0	16.82	160
1703	5.0	16.12	12
1801	5.0	14.03	61
1903	5.0	12.68	38
2001	4.8	12.53	75
2103	4.7	11.85	92
2202	4.7	12.73	60
2303	5.0	12.89	18
0002	4.8	12.96	17
0102	4.6	10.98	6
0202	4.8	10.63	32
0303	5.0	15.74	73
0402	5.0	18.74	84
0520	5.0	18.02	63
0604	4.5	21.23	143
0703	5.0	22.86	38
0730	5.0	24.21	19
Three-Quarter			
1501	7.0	19.20	10
1702	7.0	16.17	54
1902	7.0	12.77	46
2102	6.0	12.07	167
2302	7.0	13.11	21
0101	6.0	11.58	13

(Sheet 2 of 3)

Table 34 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Three-Quarter (Continued)			
0302	7.0	15.73	83
0519	7.0	18.05	91
0702	7.0	23.53	48
Bottom			
0730	9.0	24.54	69
0824	9.0	21.58	10
0908	9.0	22.19	55
1002	9.0	22.03	14
1100	9.5	21.57	14
1201	9.5	20.31	17
1301	10.0	19.73	12
1400	9.5	19.48	11
1500	9.4	17.69	10
1601	9.0	16.93	10
1701	9.0	11.11	8
1800	8.7	11.55	8
1901	9.0	10.47	18
2000	8.5	11.62	10
2101	8.4	11.17	16
2201	8.3	7.18	10
2301	9.0	12.04	12
0001	8.5	11.52	10
0100	8.3	10.55	11
0201	8.4	10.17	9
0301	9.0	9.97	8
0401	9.0	16.70	25
0518	9.0	17.62	47
0602	9.0	18.75	31
0701	9.0	18.93	24
0729	9.0	19.89	23

(Sheet 3 of 3)

Table 35
Salinity Concentrations and Suspended Sediments Observed at Station R3.0B, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0748	3.0	23.18	26
0835	3.0	22.60	26
0924	3.0	21.39	39
1014	3.0	23.63	14
1114	3.0	21.82	17
1208	3.0	21.64	7
1314	3.0	20.16	15
1409	3.0	19.61	14
1512	3.0	19.61	12
1610	3.0	13.91	10
1712	3.0	15.03	12
1809	3.0	14.82	14
1914	3.0	11.19	10
2009	3.0	12.29	14
2113	3.0	12.09	13
2210	3.0	11.70	22
0008	3.0	13.03	21
0211	3.0	10.83	31
0316	3.0	18.81	25
0410	3.0	15.45	17
0531	3.0	18.16	16
0610	3.0	19.31	22
0710	3.0	22.02	21
0740	3.0	21.04	106
One-Quarter			
1511	5.0	19.68	11
1711	5.0	15.42	12
1913	4.0	12.55	11
2008	4.8	12.53	*
2112	4.0	12.51	29

(Sheet 1 of 4)

Table 35 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
One-Quarter (Continued)			
2311	4.0	12.63	17
0110	4.0	12.08	11
0315	4.0	18.84	37
0530	4.0	18.76	33
Middepth			
0745	6.5	25.66	66
0832	6.5	25.95	48
0922	6.5	26.18	35
1012	6.0	24.90	23
1112	6.8	24.82	17
1207	6.8	24.39	18
1310	6.8	22.97	15
1408	6.9	23.58	49
1510	7.0	20.80	26
1609	7.0	18.55	44
1710	6.5	16.16	22
1808	6.0	13.73	27
1912	6.4	14.94	33
2111	6.0	14.34	51
2209	6.0	14.40	30
2310	6.3	12.90	17
0007	6.0	12.83	20
0111	6.5	13.16	12
0209	6.0	12.57	54
0314	6.0	18.74	18
0408	6.5	17.78	36
0529	6.0	18.72	69
0609	6.8	21.88	202
0709	6.5	24.22	52
0738	6.8	25.10	35

(Sheet 2 of 4)

Table 35 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Three-Quarter			
1509	10.0	22.02	75
1709	9.0	16.78	6
1911	8.0	11.85	13
2007	8.5	11.62	*
2110	8.0	14.51	63
2309	8.0	13.15	18
0109	8.0	14.00	16
0313	8.0	18.80	30
0528	8.0	18.65	30
0708	8.0	24.37	76
Bottom			
0740	12.0	19.68	34
0830	12.0	18.09	11
0920	12.0	19.91	61
1009	11.0	21.48	47
1110	12.5	19.51	19
1206	12.5	24.39	16
1308	12.5	19.43	13
1406	12.8	16.58	11
1508	13.0	15.69	12
1606	13.0	14.77	16
1708	12.0	13.92	12
1806	11.0	13.14	13
1910	11.8	12.41	25
2109	11.0	11.75	44
2208	11.0	10.94	18
2307	11.5	13.08	23
0006	12.0	12.43	11
0108	12.0	10.79	12
0208	11.0	9.46	8
0312	12.0	14.05	35

(Sheet 3 of 4)

Table 35 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
0407	12.0	13.73	33
0527	12.0	15.79	28
0606	12.5	16.23	50
0707	12.0	17.67	42
0736	12.5	18.93	41

(Sheet 4 of 4)

Table 36
Salinity Concentrations and Suspended Sediments Observed at Station R3.0C, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0754	3.0	21.71	17
0846	3.0	22.24	14
0932	3.0	22.66	49
1018	3.0	21.57	11
1121	3.0	20.99	9
1216	3.0	19.74	15
1321	3.0	19.87	19
1416	3.0	18.16	9
1520	3.0	16.71	11
1619	3.0	17.59	11
1723	3.0	15.29	45
1815	3.0	13.37	8
1924	3.0	13.58	11
2018	3.0	12.16	17
2121	3.0	13.05	15
2217	3.0	12.64	28
2319	3.0	12.97	15
0015	3.0	10.06	6
0119	3.0	12.02	11
0222	3.0	12.23	11
0332	3.0	13.95	51
0420	3.0	17.61	37
0541	3.0	18.74	32
0617	3.0	20.83	60
0710	3.0	20.24	18
0750	3.0	20.91	43
Middepth			
0752	4.5	24.50	25
0844	4.5	23.83	13
0931	4.5	23.92	25

(Sheet 1 of 3)

Table 36 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1017	4.5	20.98	20
1120	4.5	21.37	9
1214	4.4	22.25	13
1320	4.5	19.91	14
1415	4.5	20.30	12
1519	4.3	19.78	17
1618	4.4	16.93	11
1722	4.3	15.49	8
1814	4.3	14.40	10
2017	4.0	13.09	29
2120	4.0	13.67	23
2216	4.1	12.21	28
2318	4.0	12.94	14
0014	4.0	11.59	16
0118	4.3	12.55	9
0220	4.3	12.60	13
0330	4.0	19.09	58
0418	4.3	17.71	49
0540	4.5	18.65	40
0616	4.5	20.90	69
0709	4.5	21.84	31
0748	4.5	23.88	35
Three-Quarter			
1319	6.0	21.92	12
1518	6.0	20.65	23
1721	6.0	16.32	11
1923	6.0	11.08	6
2119	6.0	9.99	18
2317	6.0	12.46	15
0117	6.0	10.66	16
0328	6.0	18.80	76

Table 36 (Concluded)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Three-Quarter (Continued)			
0539	6.0	16.21	20
Bottom			
0753	8.0	24.42	24
0840	8.0	18.10	14
0928	8.0	20.82	15
1016	8.0	20.39	21
1118	8.0	19.96	14
1213	7.8	19.32	11
1318	8.0	19.02	12
1414	7.9	15.99	12
1516	8.0	17.98	10
1616	7.8	13.86	13
1720	7.5	13.83	9
1813	7.5	11.90	26
1922	7.5	10.91	9
2016	7.0	9.50	23
2118	7.0	8.36	9
2215	7.0	11.26	11
2316	7.0	12.56	17
0013	7.0	12.68	13
0116	7.5	10.44	8
0218	7.5	10.73	19
0327	7.5	11.87	17
0417	7.5	13.02	24
0538	8.0	16.40	20
0615	8.0	14.40	22
0715	8.0	21.26	23
0747	8.0	16.82	31
(Sheet 3 of 3)			

Table 37
Salinity Concentrations and Suspended Sediments Observed at Station R3.0D, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0812	3.0	21.69	9
0858	3.0	22.16	10
0940	3.0	22.25	19
1024	3.0	22.49	12
1126	3.0	20.53	10
1222	3.0	20.05	10
1327	3.0	20.30	12
1422	3.0	17.88	10
1531	3.0	17.59	30
1625	3.0	15.42	9
1730	3.0	14.42	5
1821	3.0	14.28	11
1933	3.0	12.75	8
2036	3.0	13.27	26
2129	3.0	13.19	22
2223	3.0	12.61	17
2325	3.0	12.50	13
0021	3.0	12.66	11
0125	3.0	11.13	11
0229	3.0	10.39	10
0339	3.0	17.21	33
0425	3.0	17.42	31
0547	3.0	18.53	35
0623	3.0	19.66	26
0722	3.0	20.16	20
0757	3.0	22.60	29
Middepth			
0810	5.0	23.78	67
0857	4.5	22.49	20

(Sheet 1 of 3)

Table 37 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
0939	4.8	22.85	21
1022	4.8	22.16	17
1125	4.8	22.12	12
1220	4.9	23.24	11
1326	4.8	23.70	18
1421	4.7	20.41	10
1530	5.0	21.19	17
1624	4.6	17.76	10
1729	4.7	17.30	14
1820	4.5	13.08	11
1932	4.5	13.03	14
2035	4.5	13.29	44
2128	4.5	13.44	21
2222	4.5	10.87	14
2324	4.5	12.93	24
0020	4.5	12.66	13
0124	4.5	12.79	11
0228	4.5	11.60	12
0338	4.0	18.17	67
0424	4.8	17.68	64
0546	5.0	18.52	32
0621	4.5	21.02	55
0721	4.5	21.88	38
0756	4.5	23.34	45
Three-Quarter			
1325	6.0	19.39	12
1529	7.0	20.82	28
1728	6.0	13.59	11
1931	6.0	10.39	8
2127	6.0	9.39	16

(Sheet 2 of 3)

Table 37 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Three-Quarter (Continued)			
2323	6.0	12.91	29
0123	6.0	12.71	11
0337	6.0	18.53	95
0545	7.0	18.57	32
Bottom			
0809	8.9	[illegible].62	14
0856	8.0	2[illegible].13	11
0936	8.6	23.16	20
1021	8.5	21.93	19
1123	8.5	20.60	11
1219	8.8	19.43	11
1324	8.7	19.52	12
1420	8.4	18.74	10
1528	9.0	15.83	9
1623	8.2	12.75	11
1727	8.5	13.82	7
1819	8.0	10.11	8
1930	8.0	12.75	9
2034	8.0	9.84	13
2126	8.0	9.04	7
2221	8.0	11.57	13
2322	8.0	11.54	10
0019	8.5	9.73	18
0122	8.0	12.06	13
0227	8.0	11.21	10
0336	8.0	18.52	60
0423	8.5	17.32	39
0544	9.0	18.43	37
0620	9.0	20.66	46
0720	9.0	19.64	36
0755	9.0	20.40	16

(Sheet 3 of 3)

Table 38
Salinity Concentrations and Suspended Sediments Observed at Station R4.0A, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0659	3.0	12.81	11
1003	3.0	12.78	9
1104	3.0	13.18	16
1204	3.0	13.11	9
1302	3.0	13.11	10
1403	3.0	12.80	13
1504	3.0	12.69	10
1604	3.0	12.64	5
1704	3.0	12.24	6
1803	3.0	11.27	7
1903	3.0	10.41	6
2004	3.0	9.86	5
2104	3.0	9.95	5
2204	3.0	12.26	12
2333	3.0	9.31	9
0003	3.0	12.20	10
0103	3.0	11.98	12
0204	3.0	12.71	15
0304	3.0	13.02	10
0403	3.0	13.28	13
0504	3.0	12.68	12
0603	3.0	13.39	14
0702	3.0	13.25	11
0804	3.0	14.09	6
Middepth			
0658	5.2	12.62	6
1002	5.0	14.57	10
1102	5.1	13.09	9
1202	5.0	13.26	6
1302	5.0	14.05	12

(Sheet 1 of 3)

Table 38 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1402	5.0	13.62	13
1502	4.7	15.57	56
1602	5.0	15.19	23
1702	4.3	12.75	6
1802	4.7	12.66	10
1901	4.5	12.34	14
2002	4.6	11.83	9
2102	4.5	12.85	13
2202	4.5	12.14	14
2332	4.3	13.17	28
0002	4.5	13.39	15
0102	4.5	12.92	16
0202	4.3	13.74	15
0302	4.5	12.80	12
0401	5.5	13.29	16
0502	5.0	13.70	23
0602	5.0	13.81	11
0701	5.0	13.93	11
0802	5.0	15.45	14
Bottom			
0855	8.5	15.54	22
1000	8.0	13.85	12
1100	8.2	14.35	14
1200	8.0	13.87	30
1300	8.0	13.77	14
1400	8.0	13.56	16
1500	8.2	15.90	105
1600	8.0	13.46	9
1700	7.5	12.87	7
1800	7.4	12.67	5
1900	7.1	12.63	27

Table 38 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
2000	7.2	10.39	10
2100	7.0	13.04	18
2200	7.0	12.74	15
2330	6.5	12.80	18
2400	7.0	13.32	22
0100	7.0	13.26	18
0200	6.5	13.47	17
0300	7.0	13.66	15
0400	7.0	13.80	20
0500	8.0	13.84	25
0600	8.0	14.11	22
0700	8.0	13.88	12
0800	8.0	14.74	9

(Sheet 3 of 3)

Table 39
Salinity Concentrations and Suspended Sediments Observed at Station R4.0B, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0915	3.0	14.76	10
1015	3.0	14.09	12
1110	3.0	13.06	10
1207	3.0	12.84	18
1311	3.0	12.34	10
1408	3.0	12.32	7
1512	3.0	14.74	9
1609	3.0	12.72	4
1715	3.0	11.81	5
1807	3.0	11.28	16
1909	3.0	11.03	5
2010	3.0	8.93	3
2112	3.0	9.67	6
2326	3.0	10.83	9
0012	3.0	12.87	9
0110	3.0	10.58	19
0210	3.0	11.53	13
0310	3.0	13.15	13
0410	3.0	13.07	13
0513	3.0	12.71	15
0612	3.0	13.43	11
0710	3.0	13.99	8
0810	3.0	14.03	9
One-Quarter			
1108	5.0	14.49	*
1310	4.2	14.05	9
1608	4.5	12.75	8
1719	5.1	12.41	9
1908	4.9	12.37	9
2110	4.5	12.79	12

(Sheet 1 of 4)

Table 39 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
One-Quarter (Continued)			
2325	4.0	12.80	10
0010	5.0	12.95	10
0109	4.0	13.61	17
0209	4.0	12.89	16
0511	4.5	13.03	16
0709	5.2	13.94	12
0809	3.7	14.87	9
Middepth			
0918	8.6	16.13	18
1013	7.0	15.12	13
1206	6.7	15.21	38
1309	6.5	14.07	10
1406	7.3	15.39	13
1510	7.0	16.51	21
1607	6.5	13.86	7
1714	7.1	15.59	17
1806	6.4	14.16	3
1906	6.9	13.13	6
2012	5.5	11.83	15
2107	6.5	13.96	37
2325	5.7	12.25	16
0008	7.0	14.11	23
0108	6.2	13.70	17
0208	6.0	13.34	15
0310	5.7	13.58	47
0407	6.5	13.75	18
0510	6.5	13.28	16
0610	7.1	13.87	22
0708	7.2	14.04	8
0806	7.4	15.64	11

(Sheet 2 of 4)

Table 39 (Continued)			
Hour CST	**Depth ft**	**Salinity ppt**	**Suspended Sediment mg/l**
Three-Quarter			
1308	9.7	14.22	13
1405	10.9	17.97	38
1510	10.5	16.30	21
1604	11.1	13.51	13
1712	10.2	17.19	18
1805	10.9	14.27	*
1906	8.9	14.75	25
2010	7.7	12.42	20
2106	9.0	14.04	87
2208	9.5	14.20	*
2323	7.5	13.92	20
0006	10.0	14.19	12
0107	8.0	14.05	13
0207	8.0	14.09	15
0308	7.5	13.52	13
0405	9.7	13.75	17
0507	9.0	13.99	16
0608	10.6	14.88	15
0708	9.2	13.97	7
0807	11.1	16.31	13
Bottom			
1008	12.0	13.50	6
1106	10.8	14.46	12
1205	11.5	16.50	37
1306	11.0	14.88	19
1404	12.5	17.87	41
1506	12.0	16.81	30
1604	11.1	13.51	8
1710	12.2	16.23	14
1805	10.9	14.27	5
1905	11.8	15.12	26

(Sheet 3 of 4)

Table 39 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
2008	9.0	12.80	19
2105	11.0	13.10	10
2321	9.5	13.69	19
0004	12.0	14.54	14
0105	10.0	13.68	19
0205	10.0	14.13	13
0307	9.5	13.37	19
0404	11.0	13.87	20
0505	11.0	13.88	13
0606	12.2	14.18	16
0705	11.2	14.39	11
0805	12.5	15.02	6

(Sheet 4 of 4)

Table 40
Salinity Concentrations and Suspended Sediments Observed at Station R4.0C, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0925	3.0	13.11	7
1024	3.0	13.40	16
1117	3.0	13.14	10
1216	3.0	14.73	12
1321	3.0	12.83	12
1415	3.0	12.77	7
1522	3.0	12.59	4
1617	3.0	12.15	8
1725	3.0	11.61	5
1815	3.0	13.53	11
1919	3.0	11.26	8
2033	3.0	9.21	5
2122	3.0	9.75	6
2210	3.0	11.03	9
2315	3.0	10.90	10
0024	3.0	12.65	10
0120	3.0	13.02	16
0218	3.0	12.31	16
0321	3.0	13.11	14
0420	3.0	12.95	16
0522	3.0	12.81	8
0620	3.0	12.48	12
0721	3.0	13.07	8
0820	3.0	13.70	8
One-Quarter			
1320	4.0	12.99	*
1521	5.5	13.51	5
1724	4.0	11.77	5
1917	5.1	11.96	7
2032	5.0	13.46	7

(Sheet 1 of 4)

Table 40 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
One-Quarter (Continued)			
2121	4.0	11.67	9
2206	4.7	13.37	12
2314	4.8	12.73	12
0216	4.7	13.29	20
0320	4.5	13.13	16
0519	5.0	13.92	17
0720	5.2	13.43	8
Middepth			
0923	8.2	15.10	10
1023	7.3	15.06	13
1115	8.5	15.95	20
1215	8.0	16.27	16
1318	7.0	14.58	13
1412	7.5	15.51	6
1518	7.5	14.84	7
1614	8.2	15.40	12
1722	8.0	14.12	10
1815	7.1	13.23	6
1916	7.1	14.05	11
2030	7.0	14.82	10
2120	6.0	14.35	27
2207	6.7	14.05	20
2312	6.8	13.98	19
0020	7.0	13.23	13
0116	6.7	13.52	23
0217	6.7	13.79	24
0319	6.5	13.85	21
0418	7.0	13.53	62
0517	7.0	13.33	16
0618	7.3	14.30	13
0717	7.5	14.62	13

(Sheet 2 of 4)

Table 40 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
0817	7.4	17.06	14
Three-Quarter			
1317	10.5	15.60	*
1412	11.0	14.03	13
1518	10.2	16.28	18
1612	12.3	17.21	26
1722	12.0	12.22	10
1814	10.6	14.13	9
1914	10.5	15.25	25
2027	10.5	15.21	20
2120	8.0	14.42	36
2206	9.5	14.29	25
2310	10.2	14.11	31
0018	10.5	13.87	28
0117	10.0	14.21	25
0215	8.7	14.29	20
0317	8.5	14.26	18
0416	10.5	14.45	33
0516	9.0	14.75	17
0617	11.0	15.51	29
0716	10.5	15.27	16
0816	11.1	17.09	18
Bottom			
0920	14.5	13.95	11
1020	12.5	14.89	14
1114	15.0	16.43	14
1212	14.0	12.96	9
1315	12.0	14.60	13
1410	13.0	15.92	20
1516	13.0	12.94	8
1610	14.4	16.98	17

(Sheet 3 of 4)

Table 40 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
1720	14.0	14.76	11
1812	12.2	14.18	29
1912	12.2	15.57	23
2025	12.0	15.16	20
2118	10.0	13.79	14
2205	11.5	13.01	21
2306	11.5	11.36	23
0015	12.0	9.98	7
0115	11.4	14.37	31
0214	11.4	14.02	44
0315	11.0	11.49	12
0415	12.0	13.49	13
0515	12.0	14.65	16
0616	12.6	15.18	21
0715	12.5	15.15	15
0815	12.5	16.37	19

(Sheet 4 of 4)

Table 41
Salinity Concentrations and Suspended Sediments Observed at Station R4.0D, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0936	3.0	12.78	5
1031	3.0	13.02	22
1125	3.0	12.84	12
1223	3.0	13.22	26
1326	3.0	12.81	7
1420	3.0	12.59	7
1530	3.0	12.47	6
1624	3.0	12.51	9
1730	3.0	11.59	4
1824	3.0	12.63	7
1925	3.0	11.79	5
2039	3.0	11.17	5
2130	3.0	10.22	7
2222	3.0	10.26	6
2303	3.0	9.10	9
0031	3.0	13.09	14
0127	3.0	12.17	18
0329	3.0	13.08	20
0426	3.0	12.61	14
0525	3.0	12.46	11
0726	3.0	12.93	8
0630	3.0	13.70	9
Middepth			
0936	6.2	12.96	26
1029	6.3	13.56	16
1125	6.0	14.11	14
1222	6.3	14.91	13
1327	6.0	13.19	12
1418	6.7	15.95	24
1528	6.2	13.83	9

(Sheet 1 of 3)

Table 41 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1622	6.0	14.16	5
1728	6.1	12.16	5
1822	6.0	13.53	6
1924	5.8	11.70	5
2038	5.5	12.60	7
2127	5.7	13.81	17
2221	4.5	13.04	16
2302	5.5	13.79	40
0029	5.5	13.67	29
0125	5.7	13.28	34
0224	5.4	13.22	21
0327	5.8	12.95	24
0426	6.2	12.92	18
0524	6.0	13.18	16
0627	6.3	12.40	35
0728	6.2	13.40	11
0828	6.3	15.59	11
Bottom			
0931	11.4	15.07	15
1027	10.5	14.40	96
1123	10.0	14.04	18
1220	10.5	13.01	5
1325	10.0	13.25	12
1418	11.5	15.16	51
1528	10.4	14.31	11
1620	10.0	13.65	12
1726	10.0	13.79	3
1820	10.0	13.82	6
1921	9.5	12.61	7
2035	9.0	12.81	8
2126	9.5	11.07	10

(Sheet 2 of 3)

Table 41 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
2220	7.0	12.86	20
2300	9.0	14.00	25
0027	9.0	12.75	19
0124	9.5	11.69	36
0224	8.8	13.20	17
0325	9.5	14.36	23
0425	10.4	13.45	45
0522	10.0	14.30	15
0625	10.5	14.48	45
0723	10.5	14.31	18
0826	10.5	15.51	13

(Sheet 3 of 3)

Table 42
Salinity Concentrations and Suspended Sediments Observed at Station R5.0A, 19-20 July 1990

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Surface			
0748	3.0	10.38	25
0809	3.0	10.40	19
0902	3.0	10.39	20
1003	3.0	10.62	20
1104	3.0	10.43	24
1203	3.0	10.41	15
1303	3.0	10.40	14
1407	3.0	10.38	12
1503	3.0	10.49	19
1603	3.0	10.53	27
1703	3.0	10.38	23
1804	3.0	10.30	14
1904	3.0	10.18	12
2003	3.0	10.16	15
2104	3.0	10.02	13
2203	3.0	9.35	11
2304	3.0	9.23	14
0004	3.0	8.74	14
0103	3.0	8.58	12
0203	3.0	9.44	16
0303	3.0	9.61	16
0403	3.0	9.35	14
0504	3.0	9.54	13
0602	3.0	10.03	11
0702	3.0	10.25	17
0802	3.0	10.53	16
Middepth			
0747	7.6	10.56	17
0808	8.5	10.56	26

(Sheet 1 of 3)

Table 42 (Continued)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
0901	7.6	10.66	39
1002	8.2	10.72	29
1103	10.0	10.55	26
1202	11.2	10.53	22
1302	13.6	10.80	10
1406	13.5	11.10	29
1503	12.4	10.83	23
1602	10.5	10.51	29
1702	16.0	10.95	31
1803	12.6	10.39	8
1903	12.0	10.25	17
2002	11.7	10.34	13
2103	10.6	10.00	41
2202	10.8	9.71	12
2303	11.6	9.96	19
0003	11.9	9.69	15
0102	8.0	9.52	14
0202	7.9	9.76	21
0302	7.3	9.89	16
0402	6.8	9.85	16
0503	7.8	9.75	17
0601	7.8	10.14	6
0701	7.1	10.55	23
0801	6.9	10.52	43
Bottom			
0745	13.2	10.80	32
0807	15.0	10.76	29
0900	13.2	10.72	39
1001	14.4	10.83	32
1102	18.0	11.40	27
1201	20.4	10.78	25

(Sheet 2 of 3)

Table 42 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
1301	25.2	11.53	19
1401	27.0	11.87	27
1502	22.8	11.47	19
1601	19.0	10.76	26
1701	30.0	11.72	30
1802	23.2	10.68	15
1902	22.0	10.33	25
2001	21.4	10.24	20
2102	19.2	10.17	23
2201	19.6	9.72	16
2302	21.2	9.58	17
0002	21.8	10.64	21
0101	14.0	9.69	15
0201	13.8	9.75	44
0301	12.6	9.83	12
0401	11.6	9.93	16
0502	13.6	9.94	12
0600	13.6	10.27	15
0701	12.2	10.27	21
0800	11.8	10.38	27

(Sheet 3 of 3)

Table 43
Salinity Concentrations and Suspended Sediments Observed at Station 5.0D, 19-20 July 1990

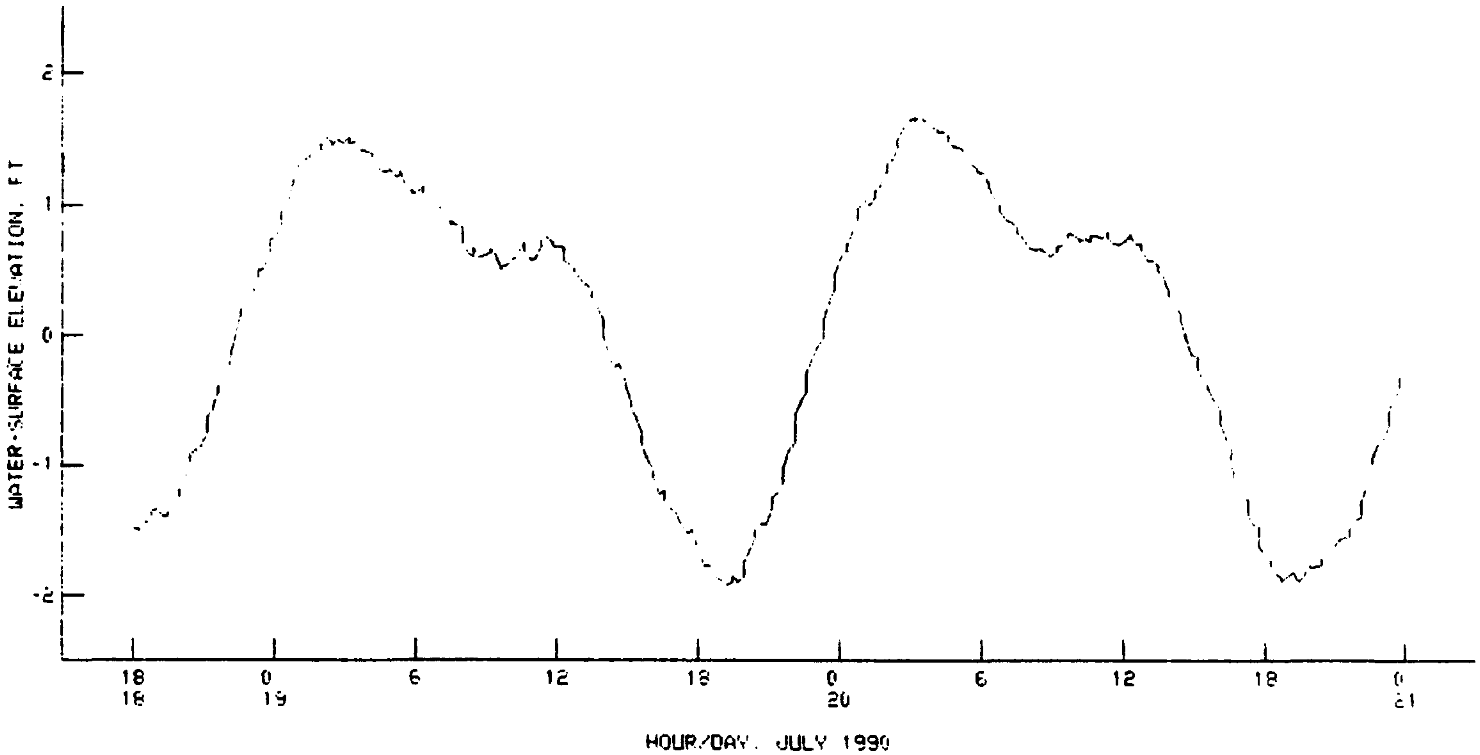
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
	Surface		
0800	3.0	10.33	24
0816	3.0	10.14	18
0909	3.0	10.44	17
1012	3.0	10.54	18
1112	3.0	10.68	21
1210	3.0	10.45	13
1314	3.0	10.52	20
1414	3.0	10.62	39
1510	3.0	10.58	19
1610	3.0	10.53	19
1709	3.0	10.47	23
1809	3.0	10.39	12
1912	3.0	10.28	31
2010	3.0	10.22	19
2110	3.0	10.13	18
2210	3.0	10.01	20
2312	3.0	9.83	23
0012	3.0	9.89	15
0112	3.0	9.65	16
0211	3.0	9.37	16
0311	3.0	9.52	17
0411	3.0	9.85	12
0512	3.0	9.98	13
0609	3.0	10.27	15
0707	3.0	10.41	14
0807	3.0	10.42	13
	Middepth		
0759	12.2	10.95	32
0815	11.4	10.74	26
0908	10.1	10.79	26

Table 43 (Continued)			
Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Middepth (Continued)			
1011	8.4	10.86	26
1111	8.3	10.93	22
1209	7.7	10.68	21
1313	7.5	10.70	26
1413	5.3	10.90	37
1509	5.8	10.54	18
1608	6.0	10.54	22
1708	6.7	10.78	31
1808	7.3	10.41	20
1911	7.7	10.85	30
2009	7.8	10.25	16
2109	7.7	10.20	19
2209	6.9	10.20	20
2311	6.6	10.09	31
0011	8.0	10.17	19
0111	11.2	9.86	19
0210	7.3	9.71	17
0310	7.8	9.94	18
0410	6.9	9.76	14
0511	8.0	9.98	10
0608	8.7	10.19	34
0706	8.9	10.58	19
0806	8.0	11.16	22
Bottom			
0758	22.4	11.13	38
0814	20.8	11.01	22
0907	14.8	10.81	32
1010	14.8	11.18	20
1110	14.6	11.30	27
1208	13.4	11.20	25
1312	13.0	11.04	26
(Sheet 2 of 3)			

Table 43 (Concluded)

Hour CST	Depth ft	Salinity ppt	Suspended Sediment mg/l
Bottom (Continued)			
1412	8.6	10.63	25
1508	9.6	10.53	22
1607	10.0	10.53	28
1708	11.4	10.55	31
1807	12.6	10.25	14
1910	13.4	10.74	28
2008	13.6	10.18	16
2108	13.4	10.17	21
2208	11.8	9.55	23
2310	11.2	9.27	22
0010	14.0	9.26	20
0109	20.4	9.08	16
0209	12.6	9.69	20
0309	13.6	9.65	19
0409	11.8	10.21	14
0510	14.0	10.01	14
0607	15.4	10.24	53
0705	15.8	10.24	21
0805	14.0	10.54	24

(Sheet 3 of 3)



*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION*
AT STATION S1.0
18 - 20 JULY 1990

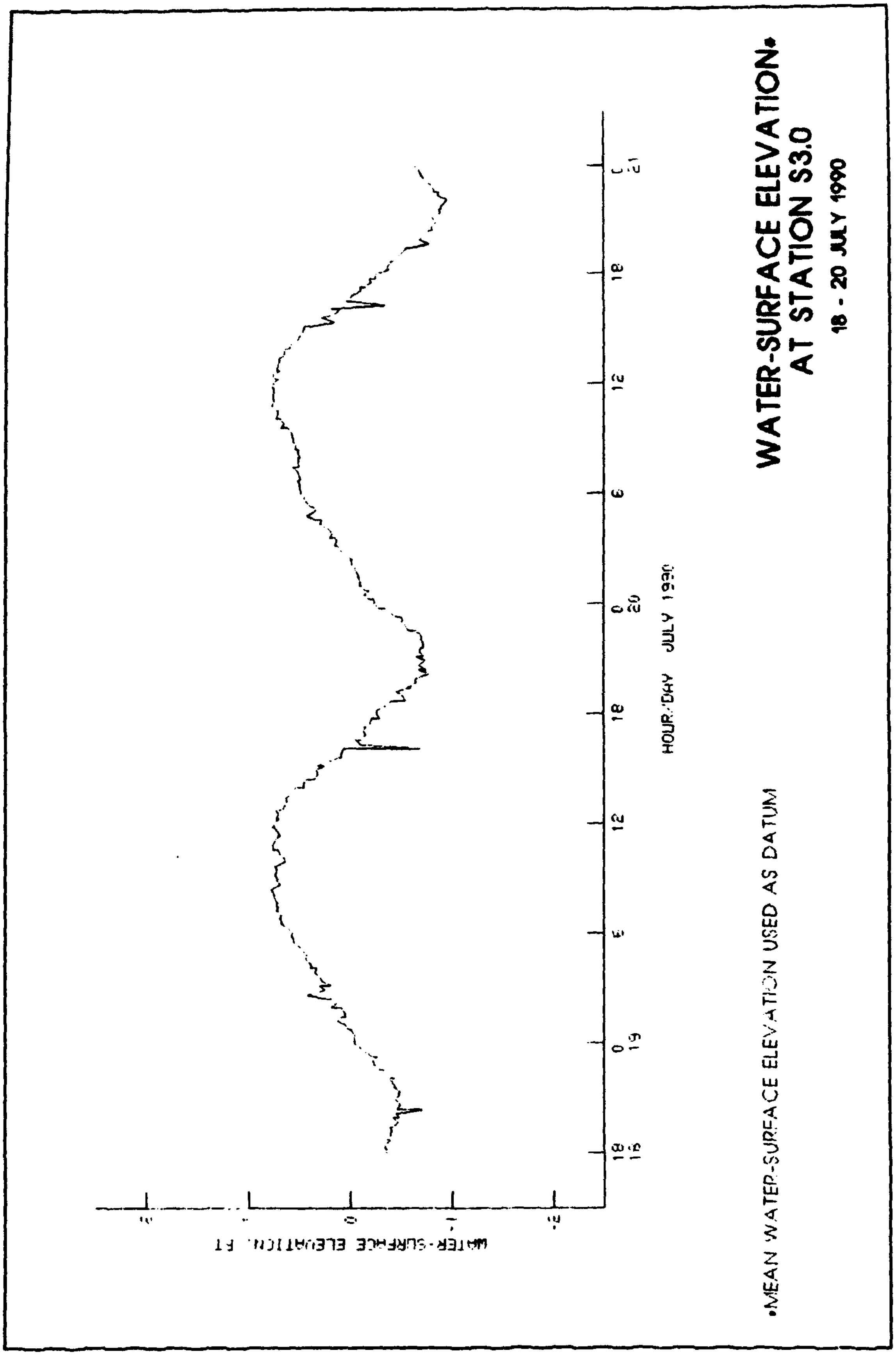
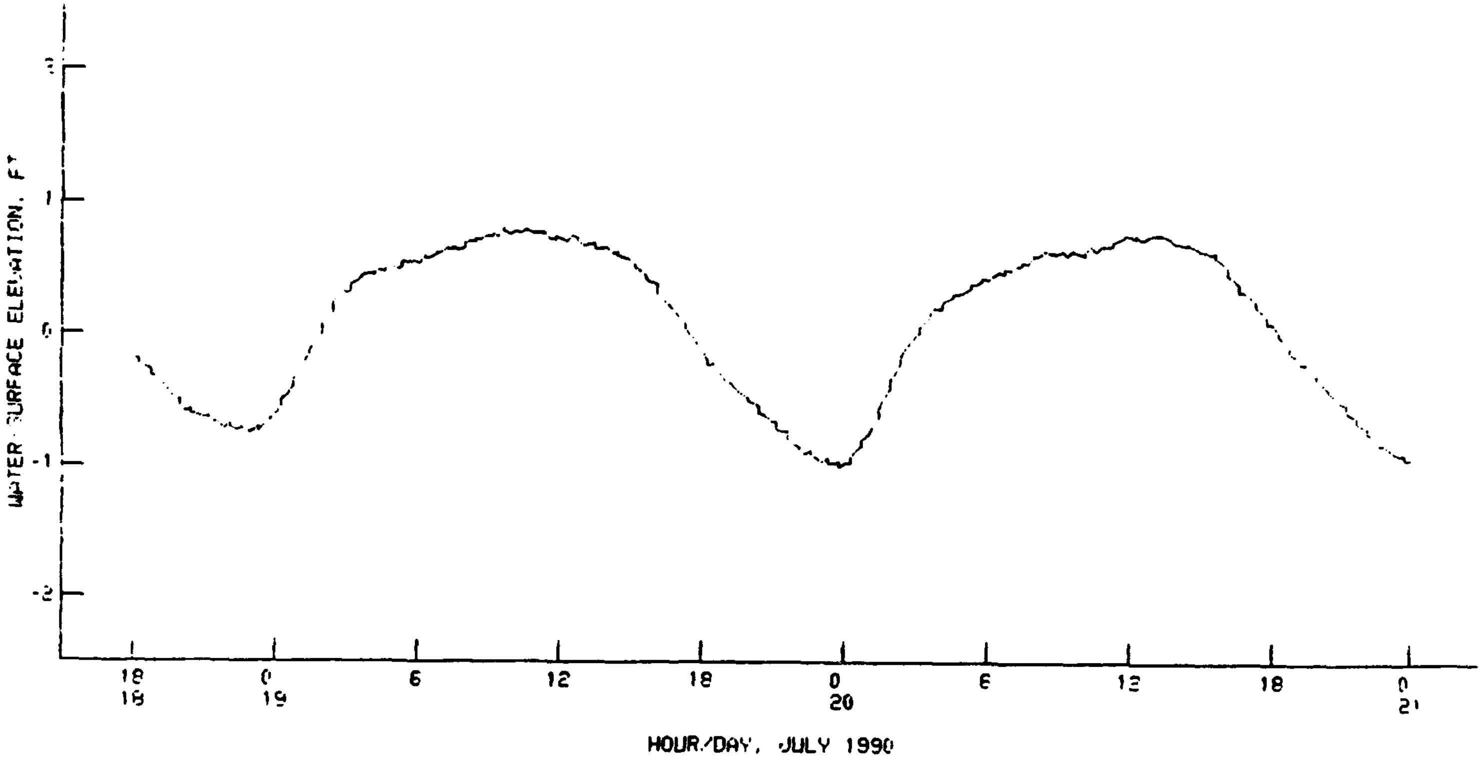

WATER-SURFACE ELEVATION*
AT STATION S3.0
18 - 20 JULY 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM
HOUR/DAY JULY 1990
WATER-SURFACE ELEVATION, FT

Plate 2



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S7.0
18 - 20 JULY 1990

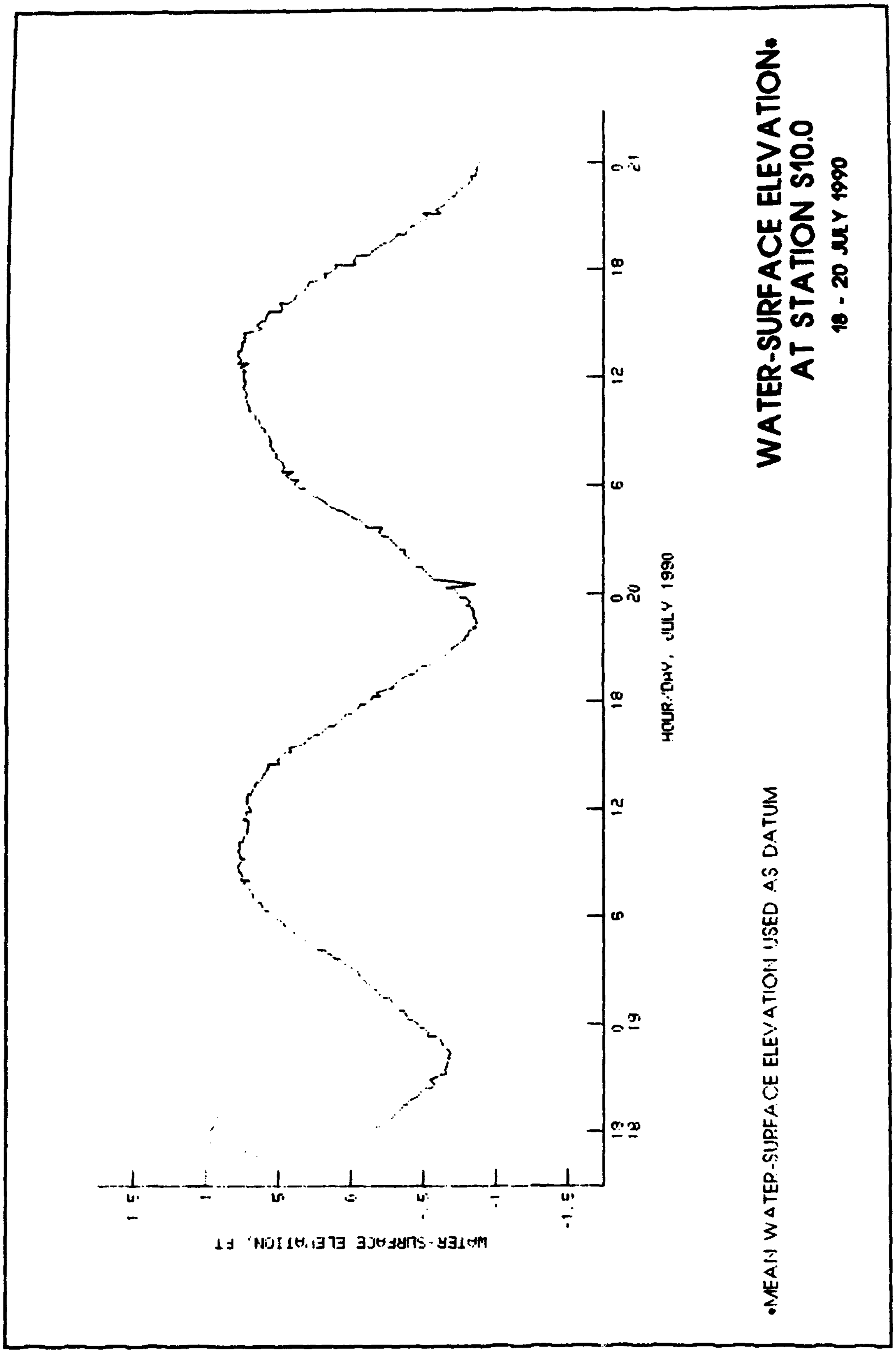
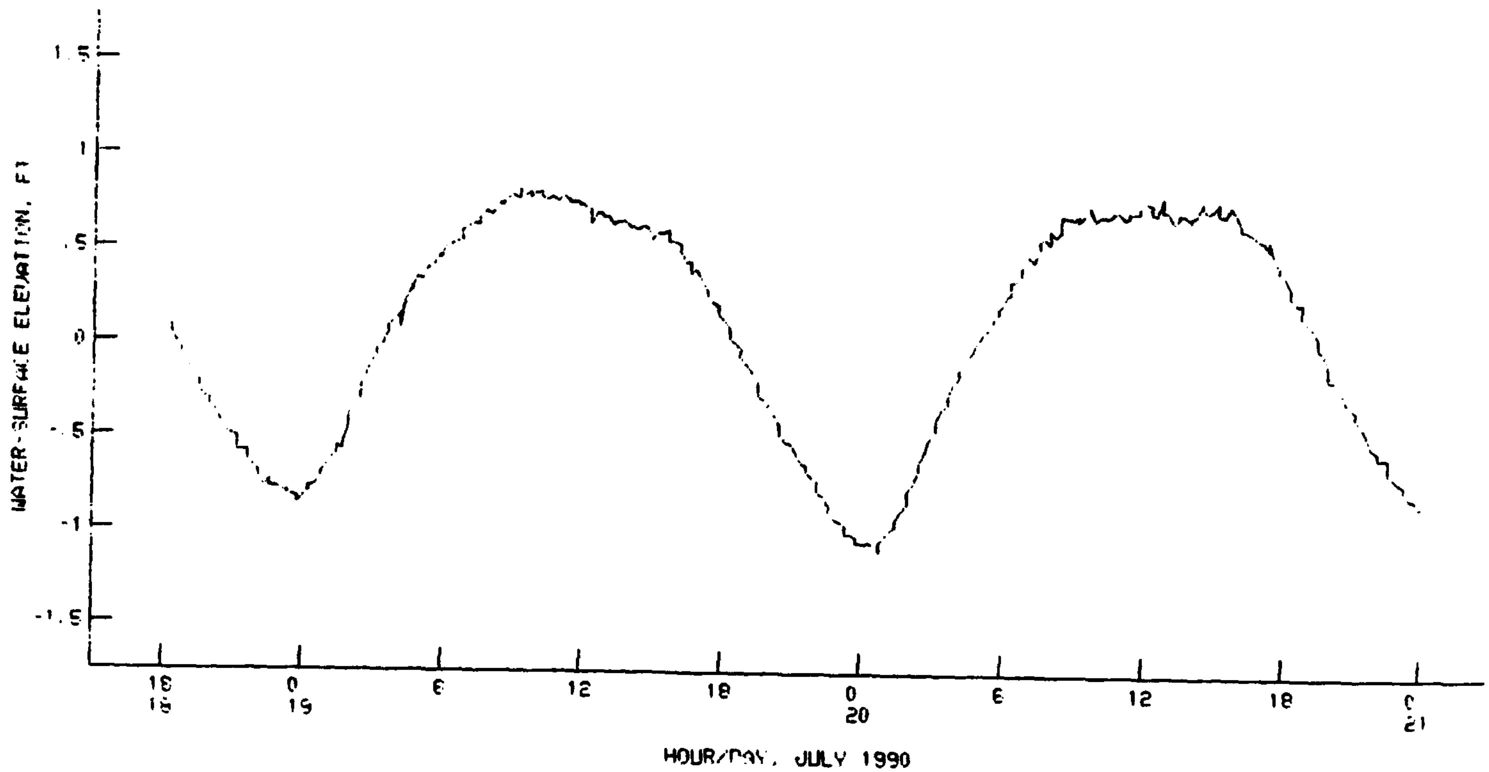
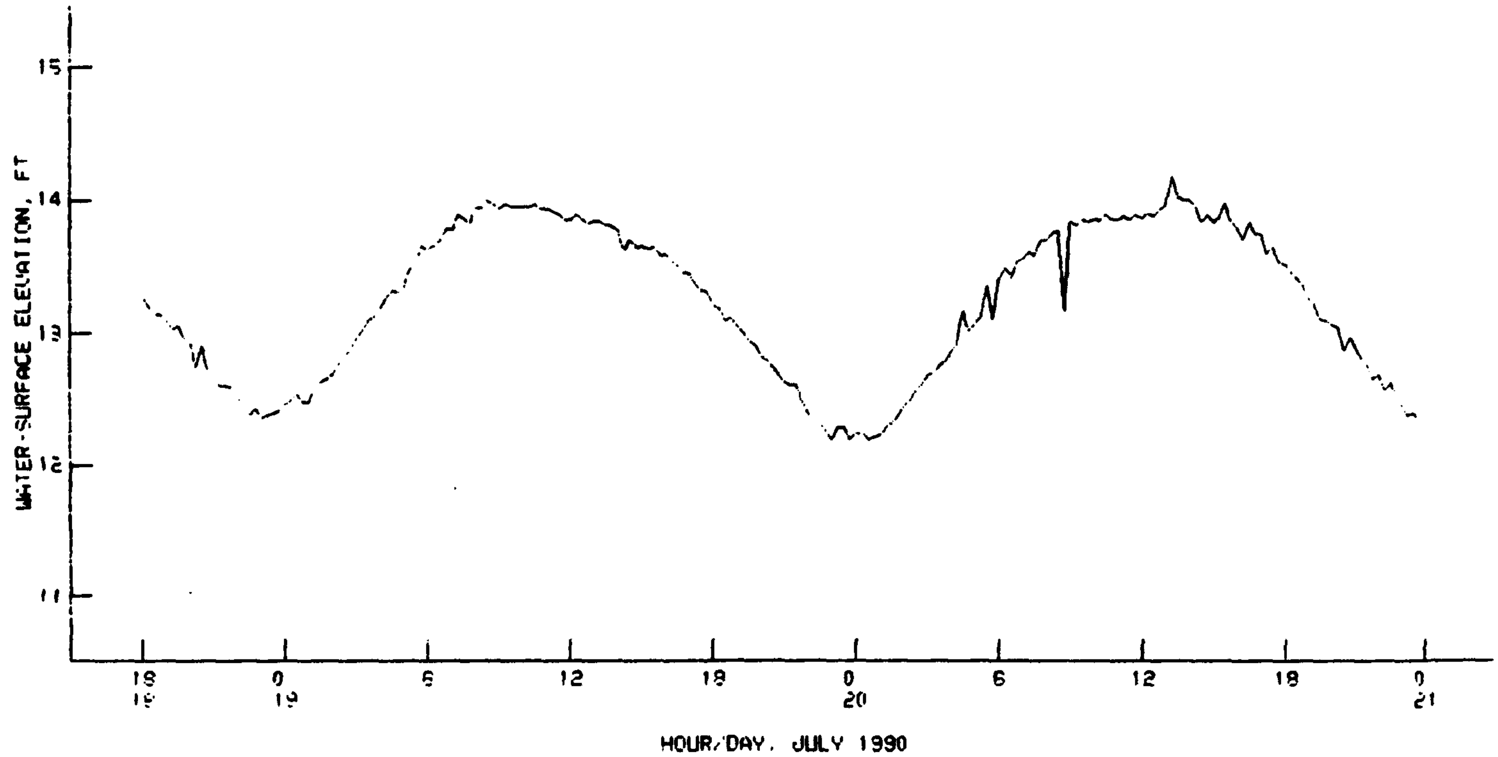

WATER-SURFACE ELEVATION*
AT STATION S10.0
18 - 20 JULY 1990
WATER-SURFACE ELEVATION, FT
HOUR/DAY, JULY 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

Plate 4



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

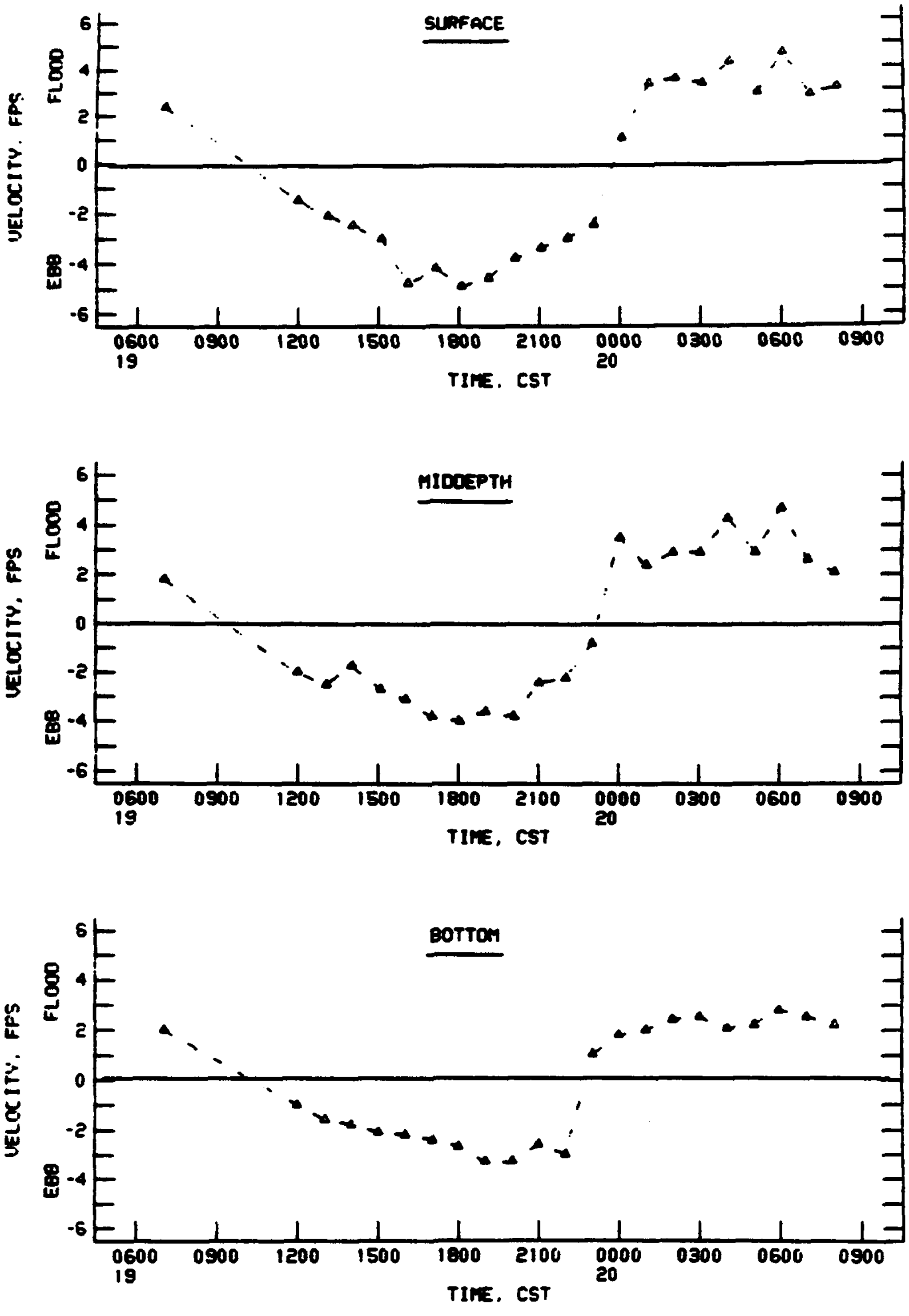
WATER-SURFACE ELEVATION•
AT STATION S14.0
18 - 20 JULY 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

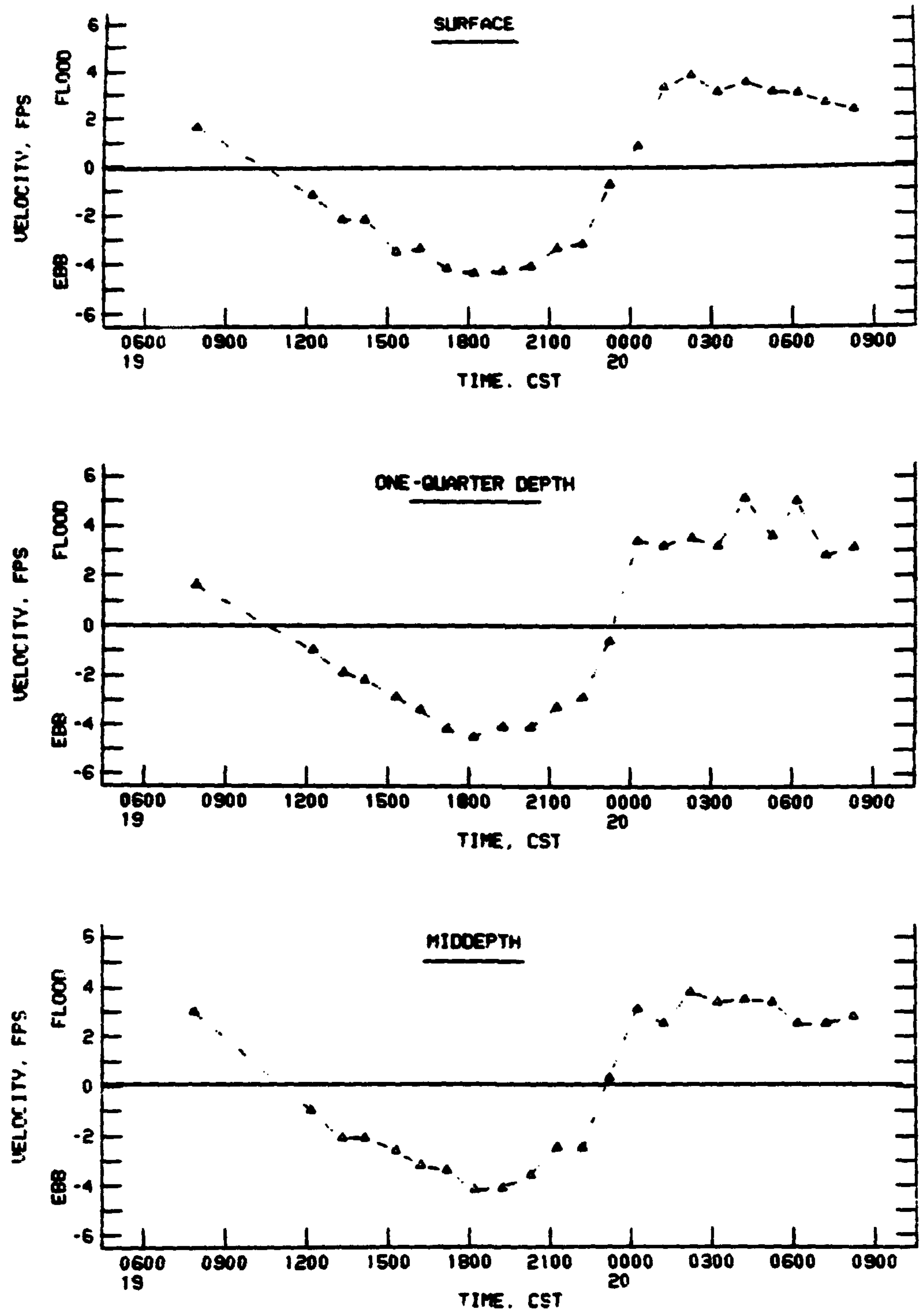
WATER-SURFACE ELEVATION•
AT STATION S16.0
18 - 20JULY 1990

Plate 6



VELOCITIES AT STATION R1.0A
SURFACE, MIDDEPTH, AND BOTTOM

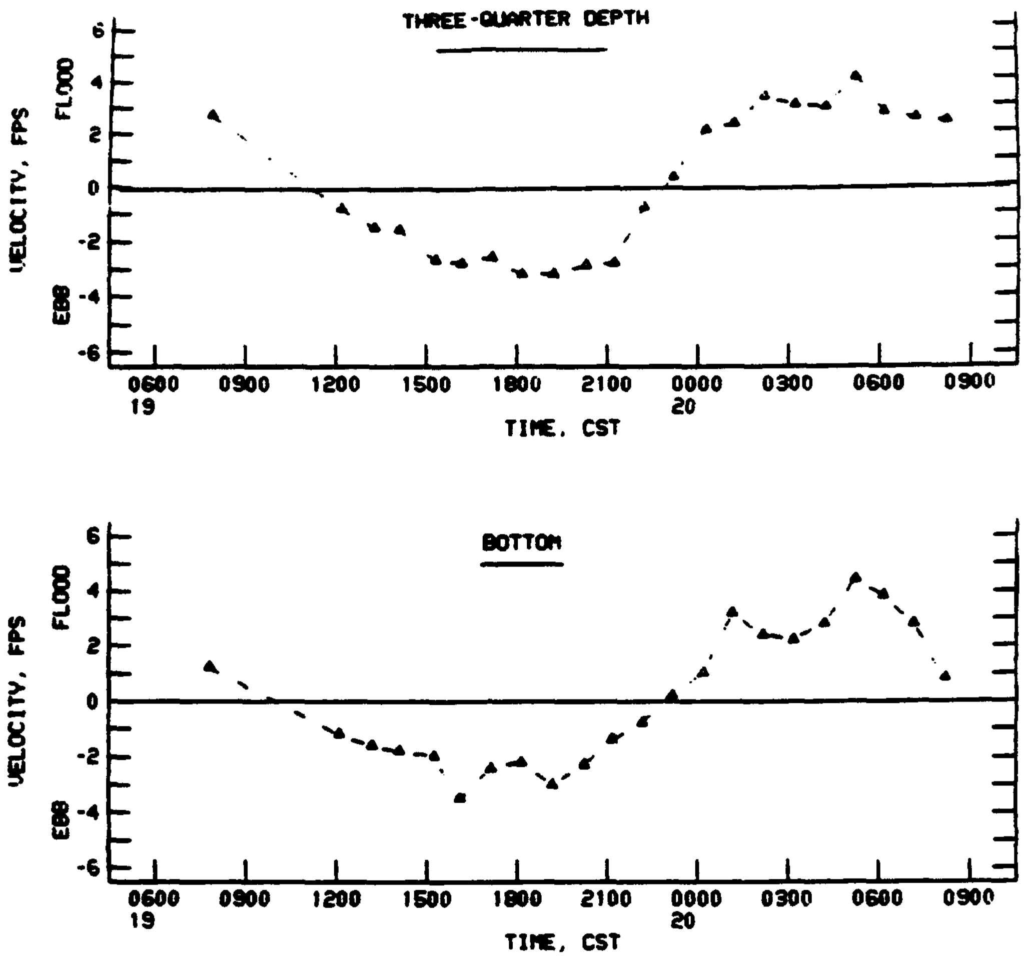
19-20 JULY 1990



VELOCITIES AT STATION R1.0B
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

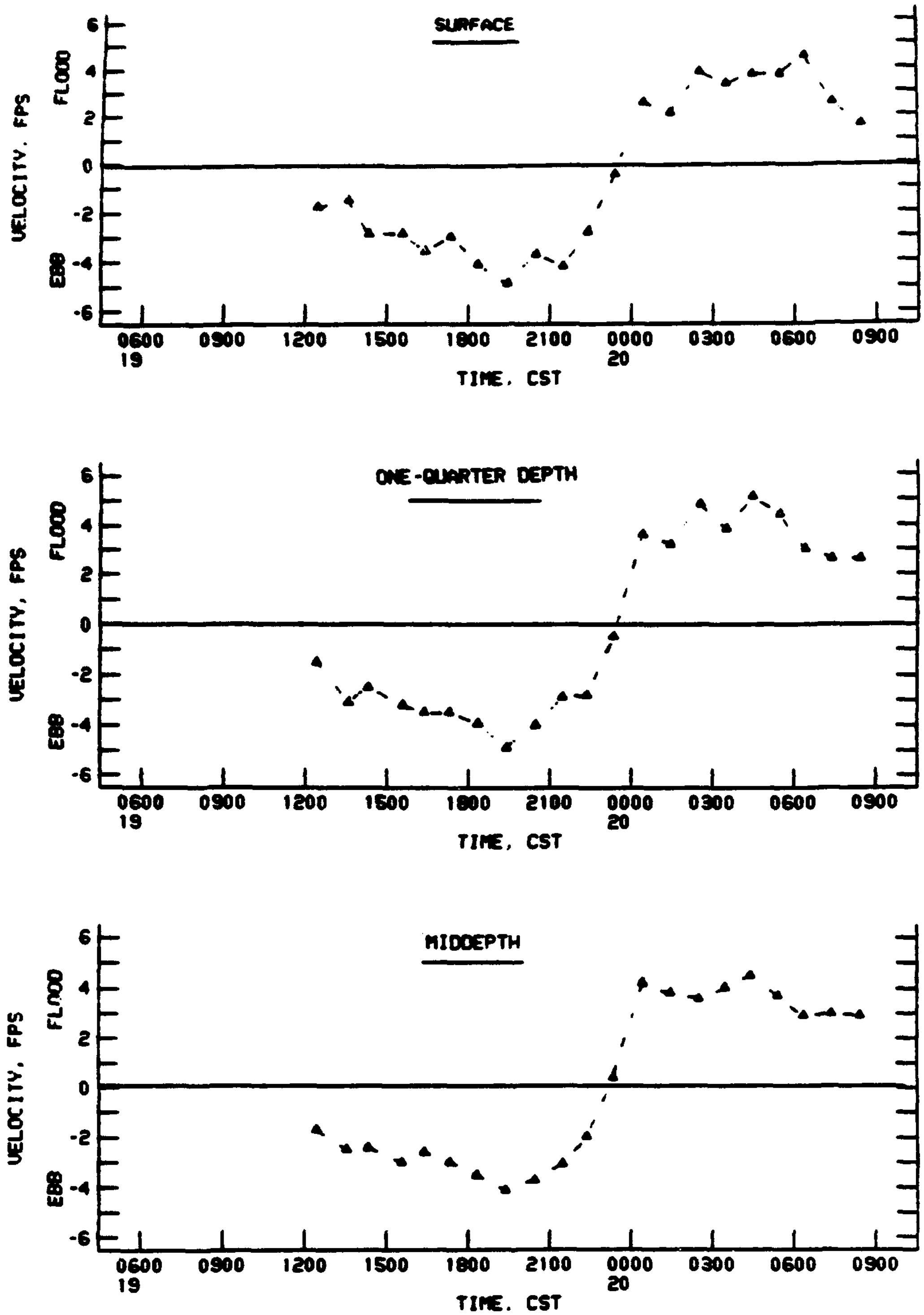
19-20 JULY 1990

Plate 8



VELOCITIES AT STATION R1.0B
THREE-QUARTER DEPTH, AND BOTTOM

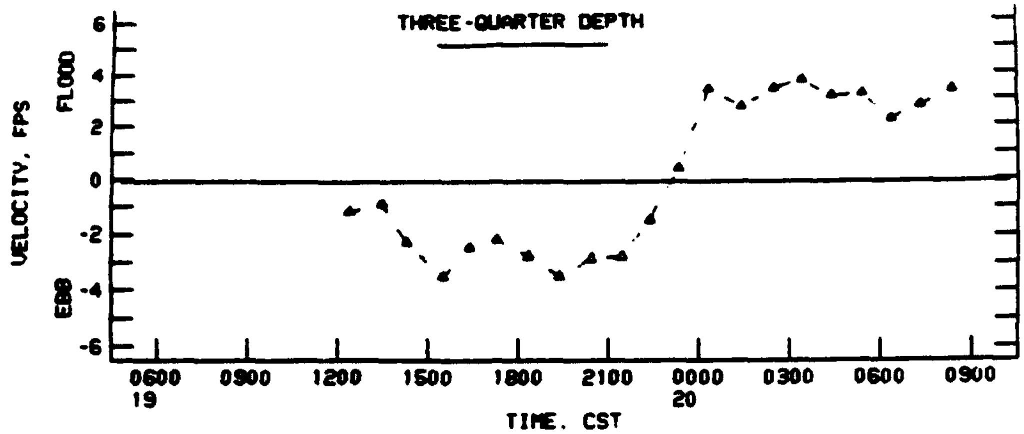
19-20 JULY 1990

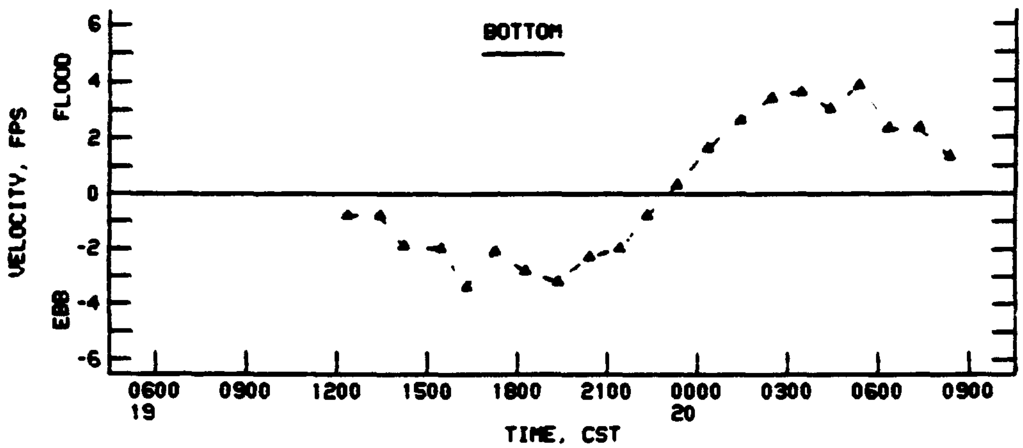


VELOCITIES AT STATION R1.0C
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990

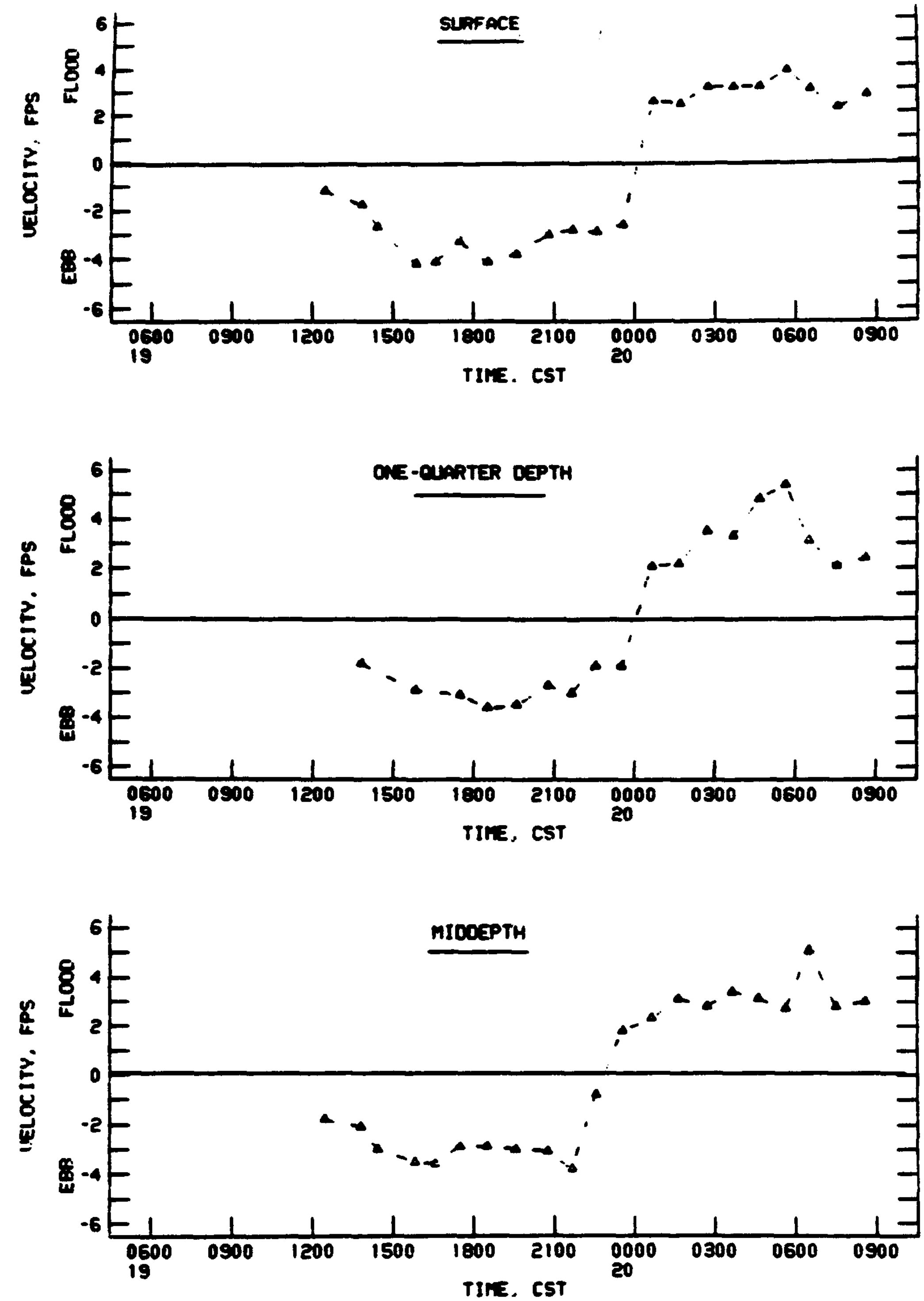
Plate 10





VELOCITIES AT STATION R1.0C
THREE-QUARTER DEPTH AND BOTTOM

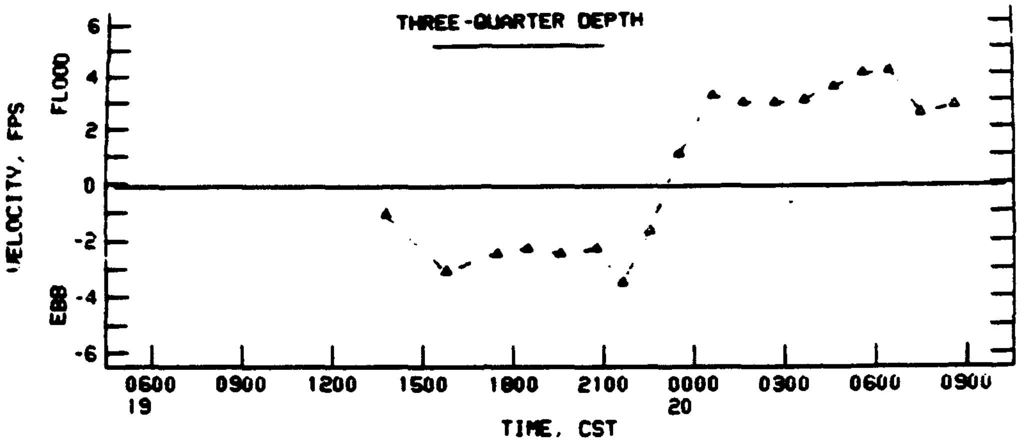
19-20 JULY 1990

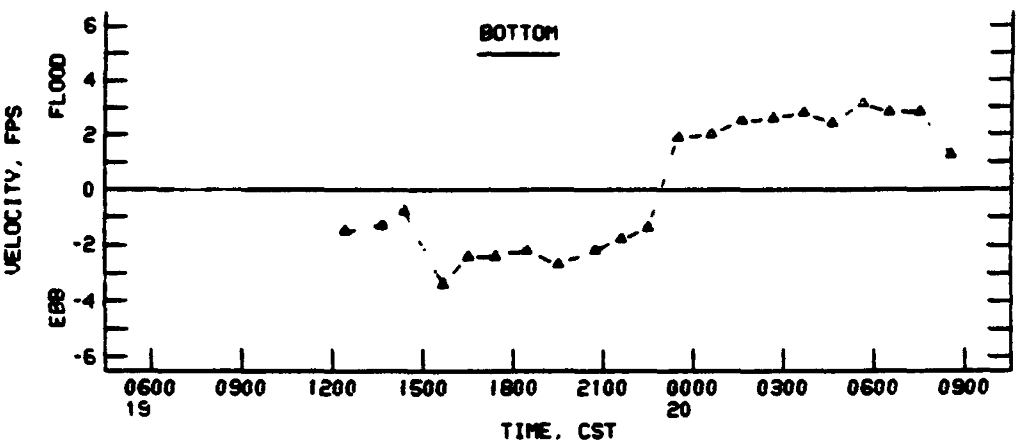


VELOCITIES AT STATION R1.0D
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990

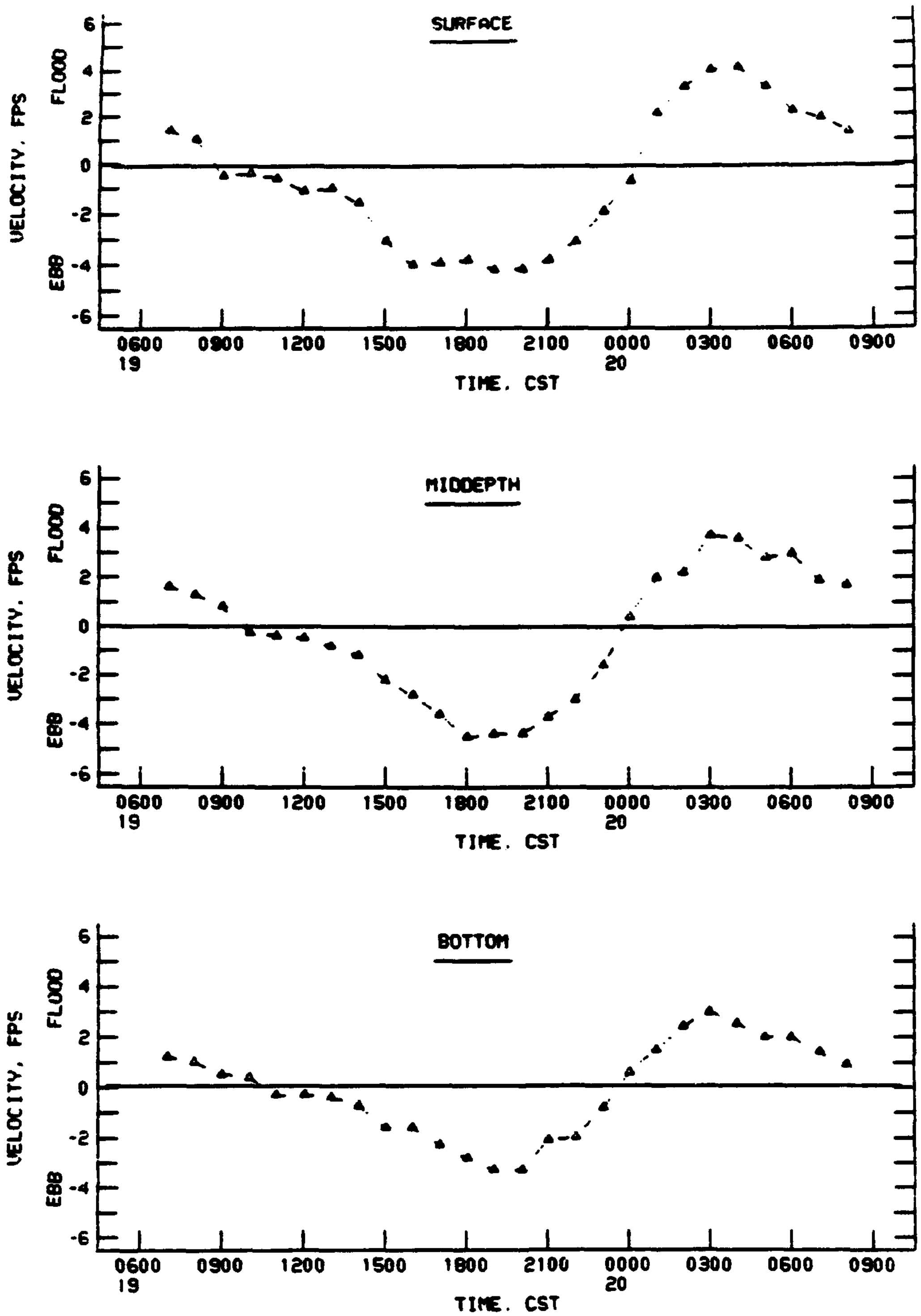
Plate 12





VELOCITIES AT STATION R1.0D
THREE-QUARTER DEPTH AND BOTTOM

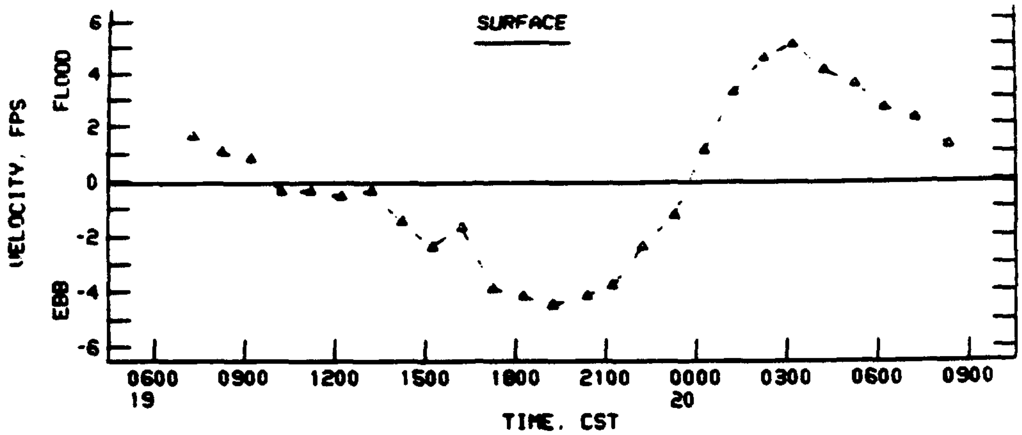
19-20 JULY 1990

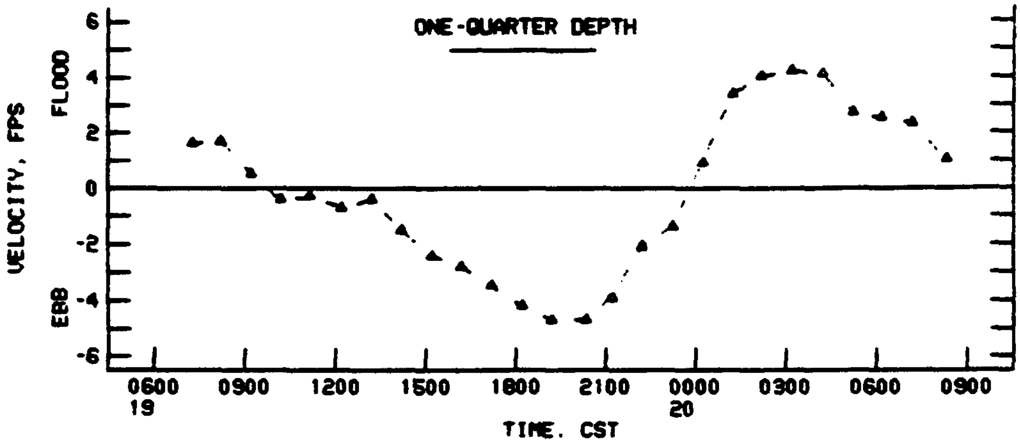


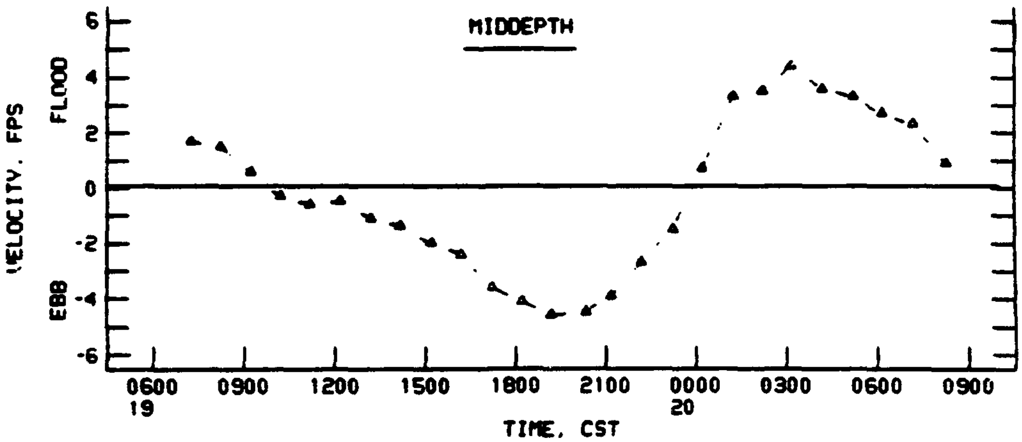
VELOCITIES AT STATION R2.0A
SURFACE, MIDDEPTH, AND BOTTOM

19-20 JULY 1990

Plate 14

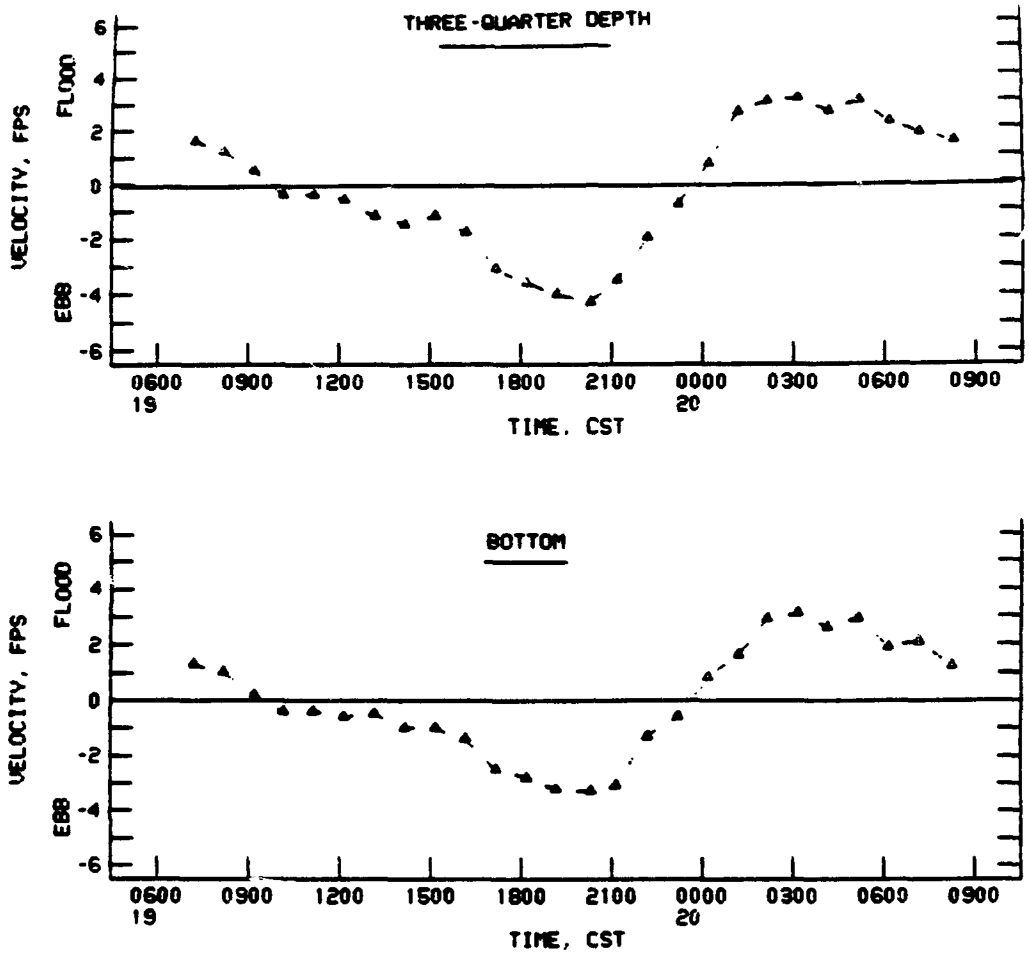






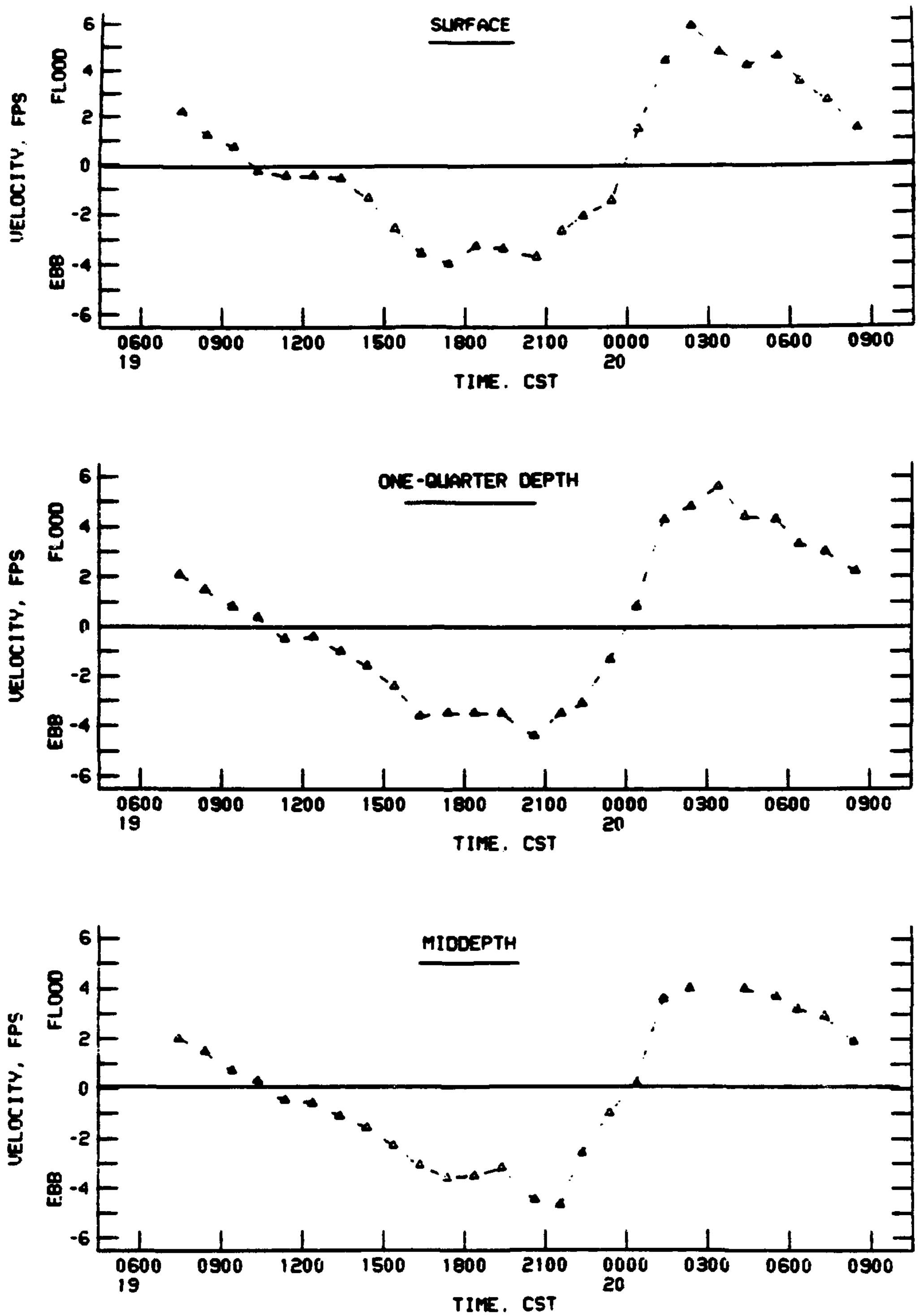
VELOCITIES AT STATION R2.0B
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990



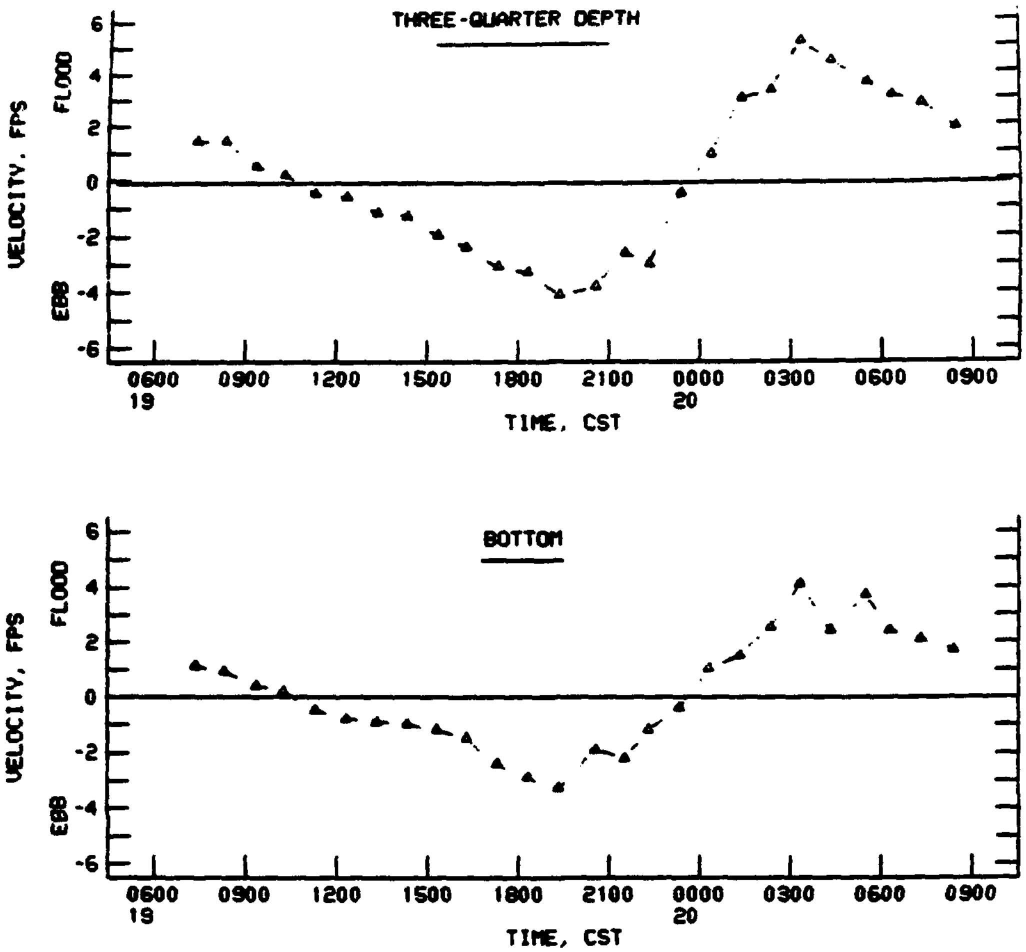
VELOCITIES AT STATION R2.0B
THREE-QUARTER DEPTH AND BOTTOM

19-20 JULY 1990



VELOCITIES AT STATION R2.0C
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

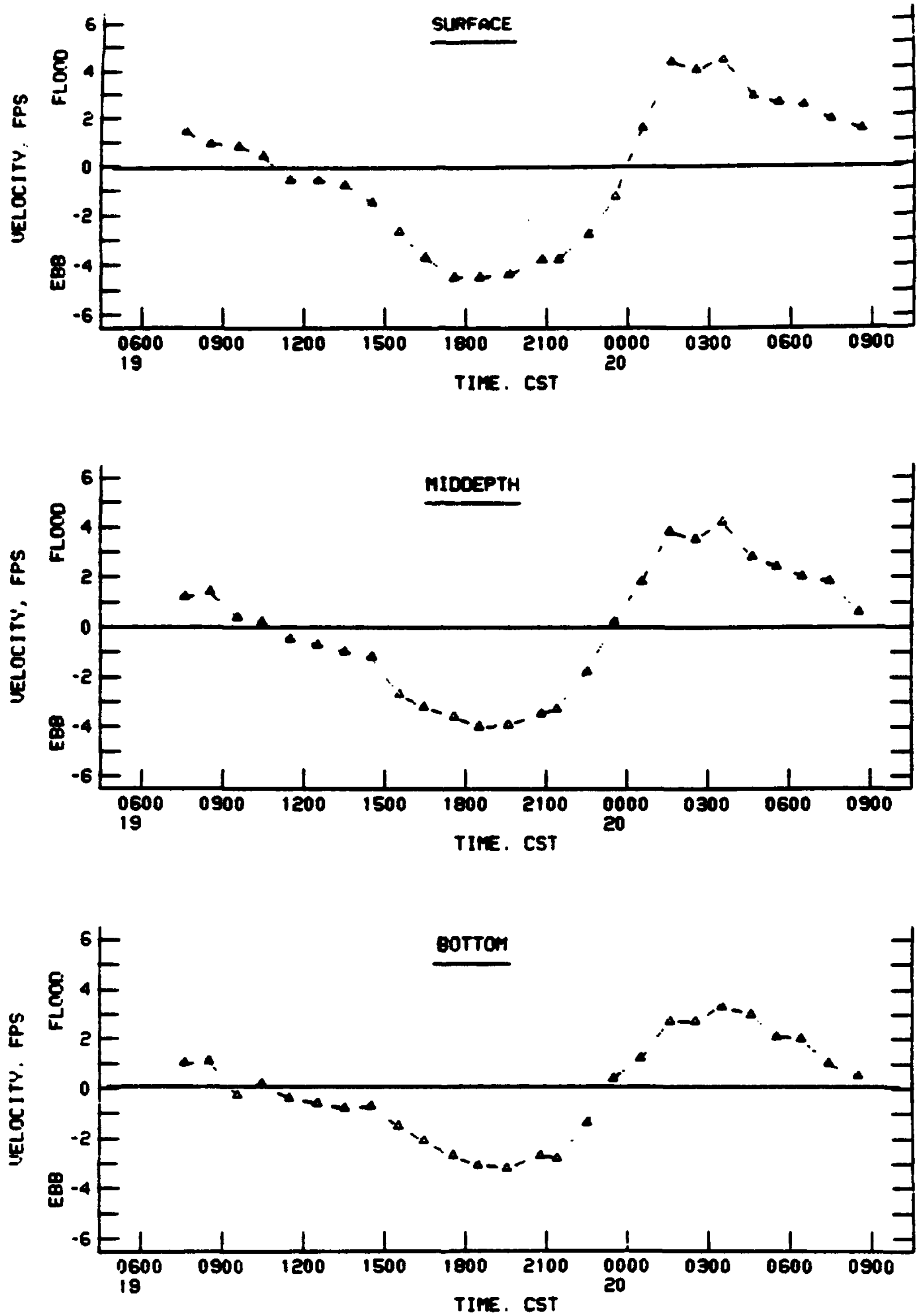
19-20 JULY 1990



VELOCITIES AT STATION R2.0C
THREE-QUARTER DEPTH AND BOTTOM

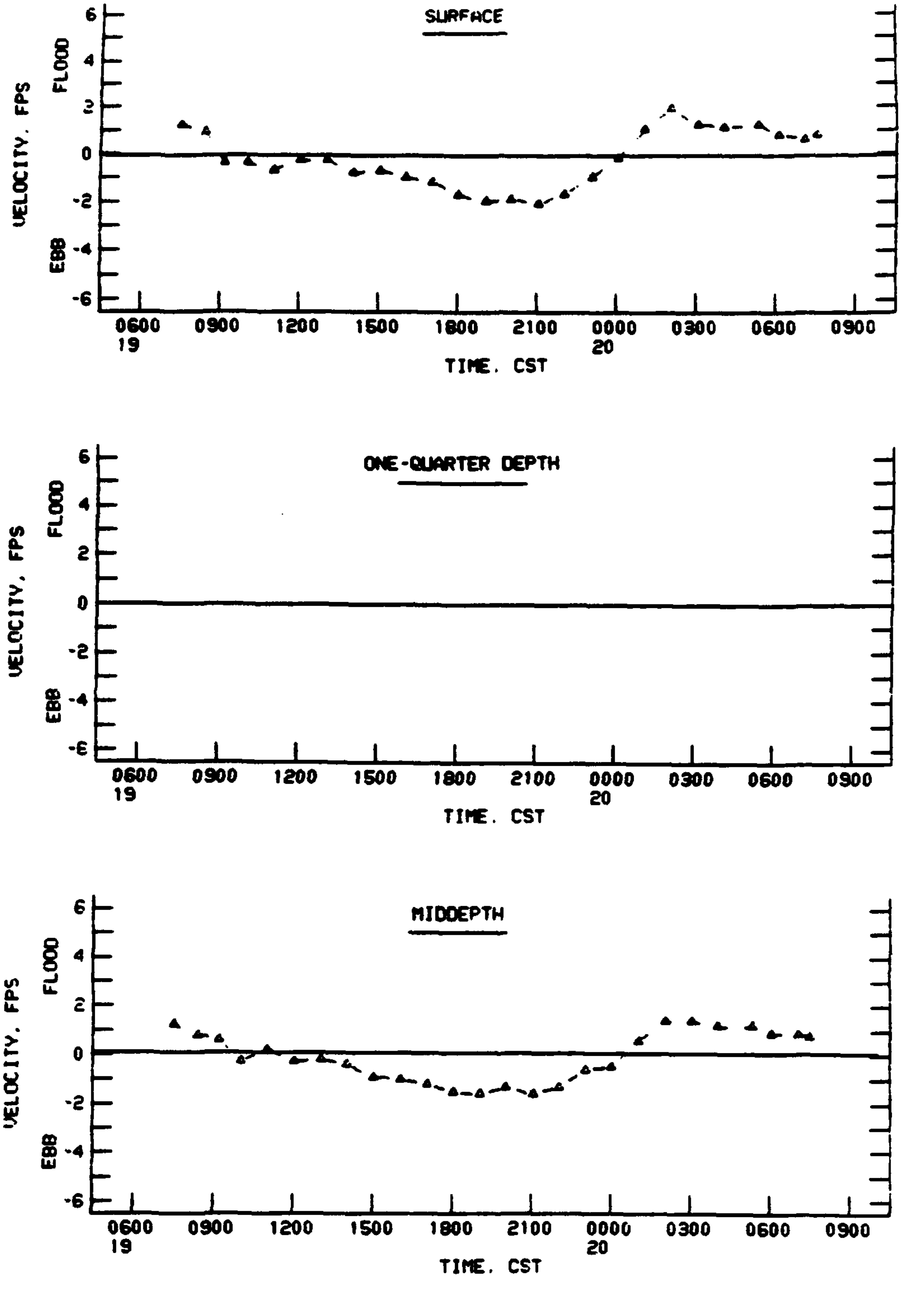
19-20 JULY 1990

Plate 18



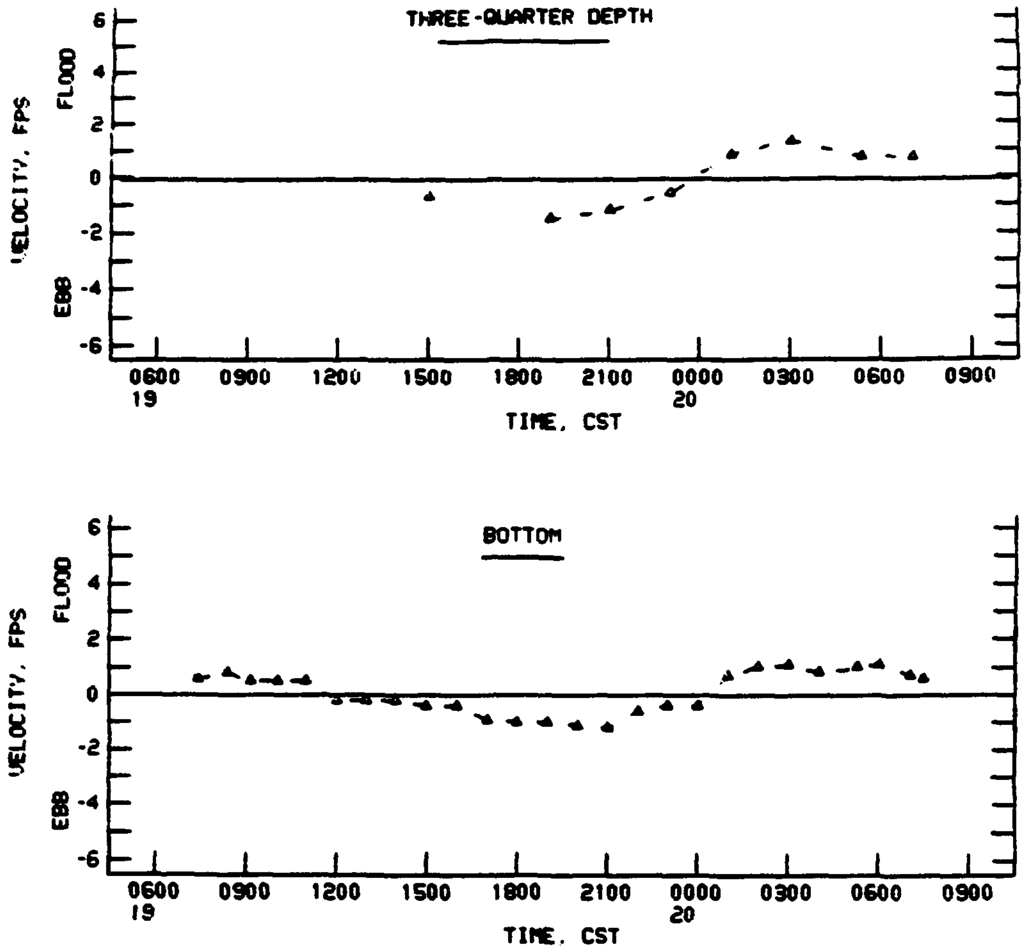
VELOCITIES AT STATION R2.0D
SURFACE, MIDDEPTH, AND BOTTOM

19-20 JULY 1990



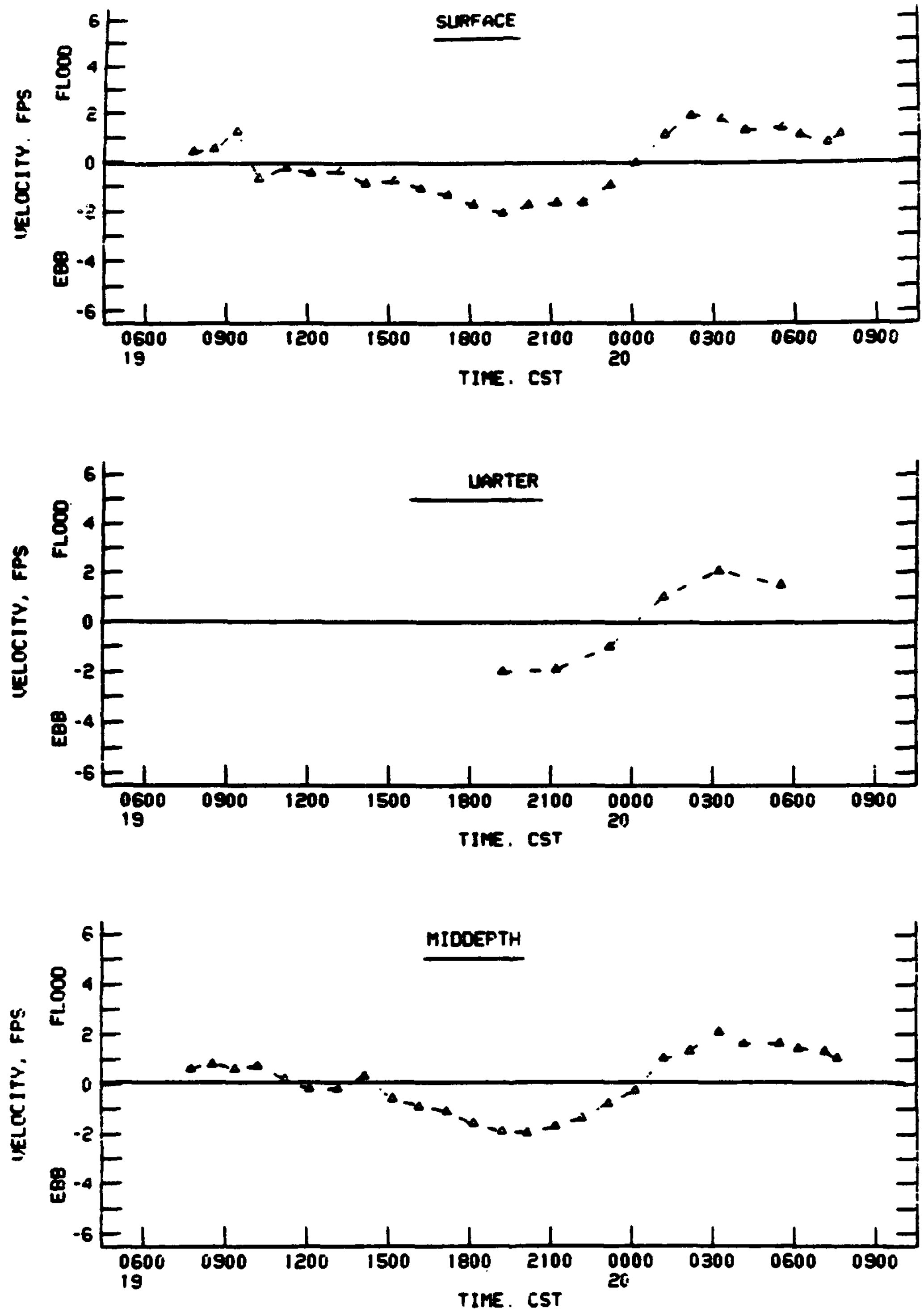
VELOCITIES AT STATION R3.0A
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990



VELOCITIES AT STATION R3.0A THREE-QUARTER DEPTH AND BOTTOM

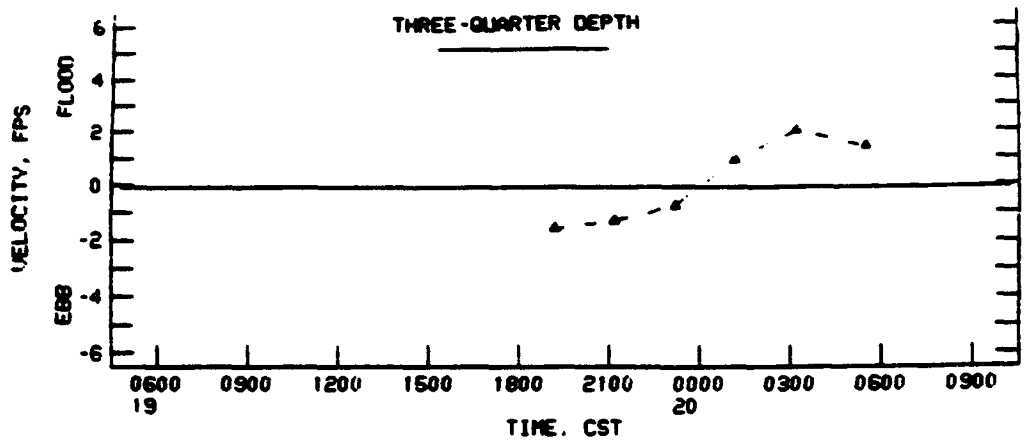
19-20 JULY 1990

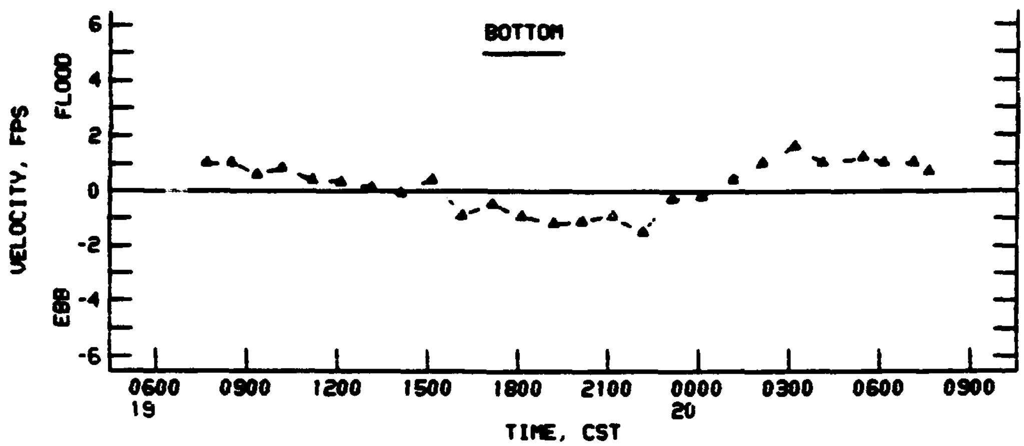


VELOCITIES AT STATION R3.0B
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990

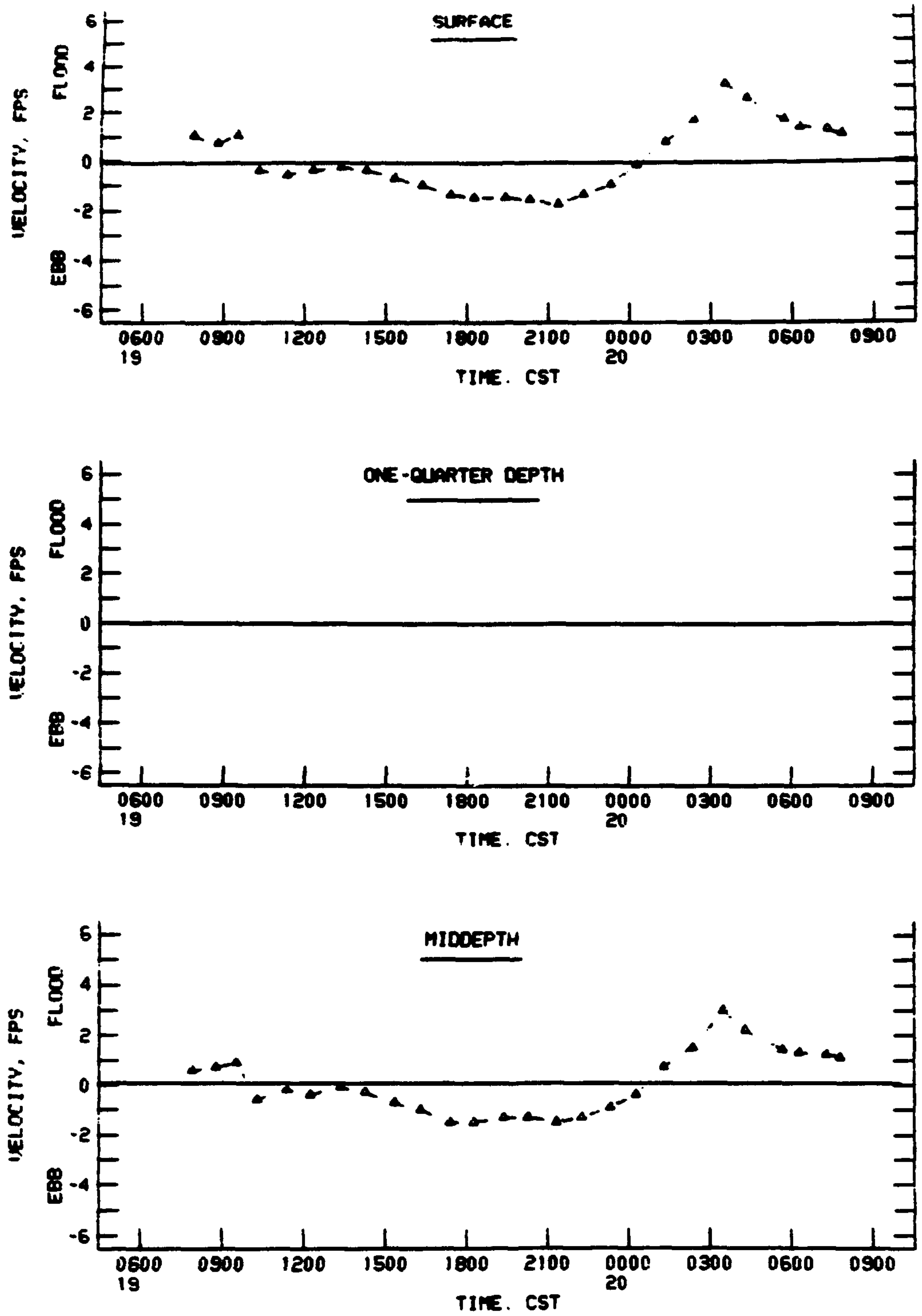
Plate 22





VELOCITIES AT STATION R3.0B
THREE-QUARTER DEPTH AND BOTTOM

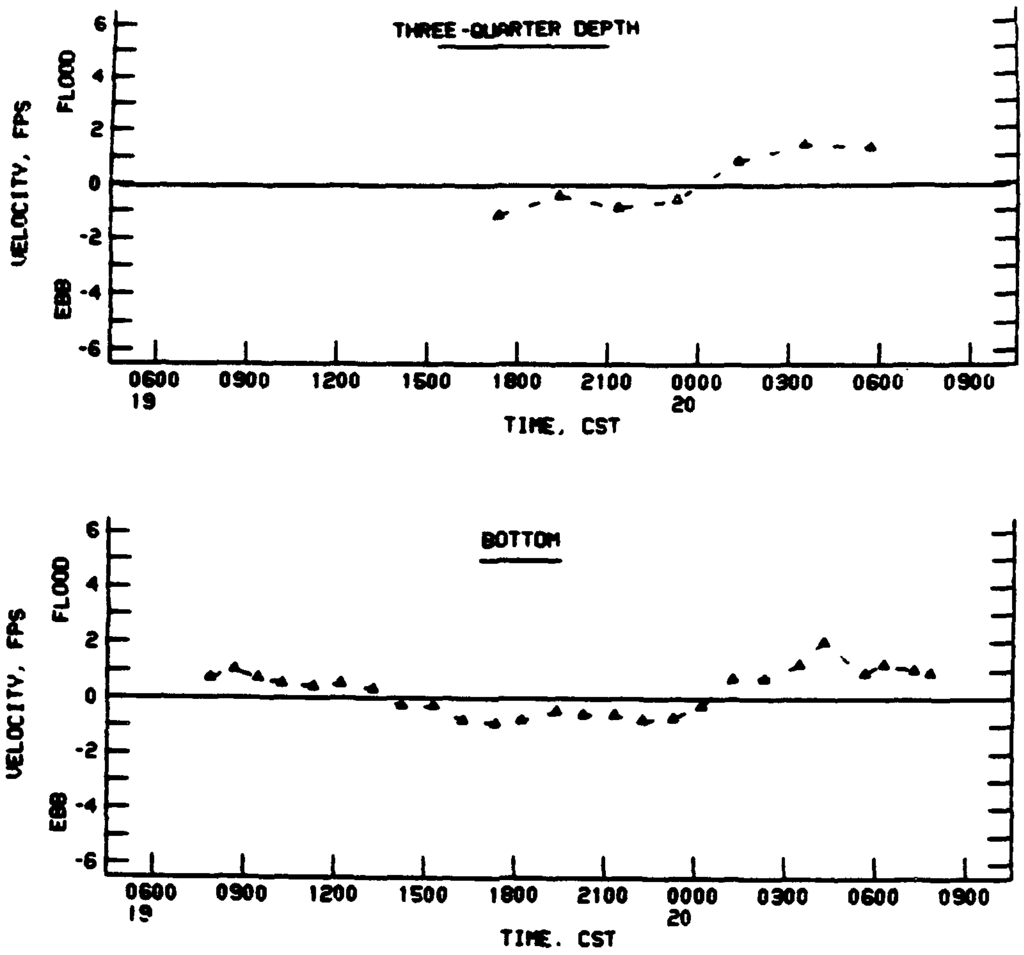
19-20 JULY 1990



VELOCITIES AT STATION R3.0C
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

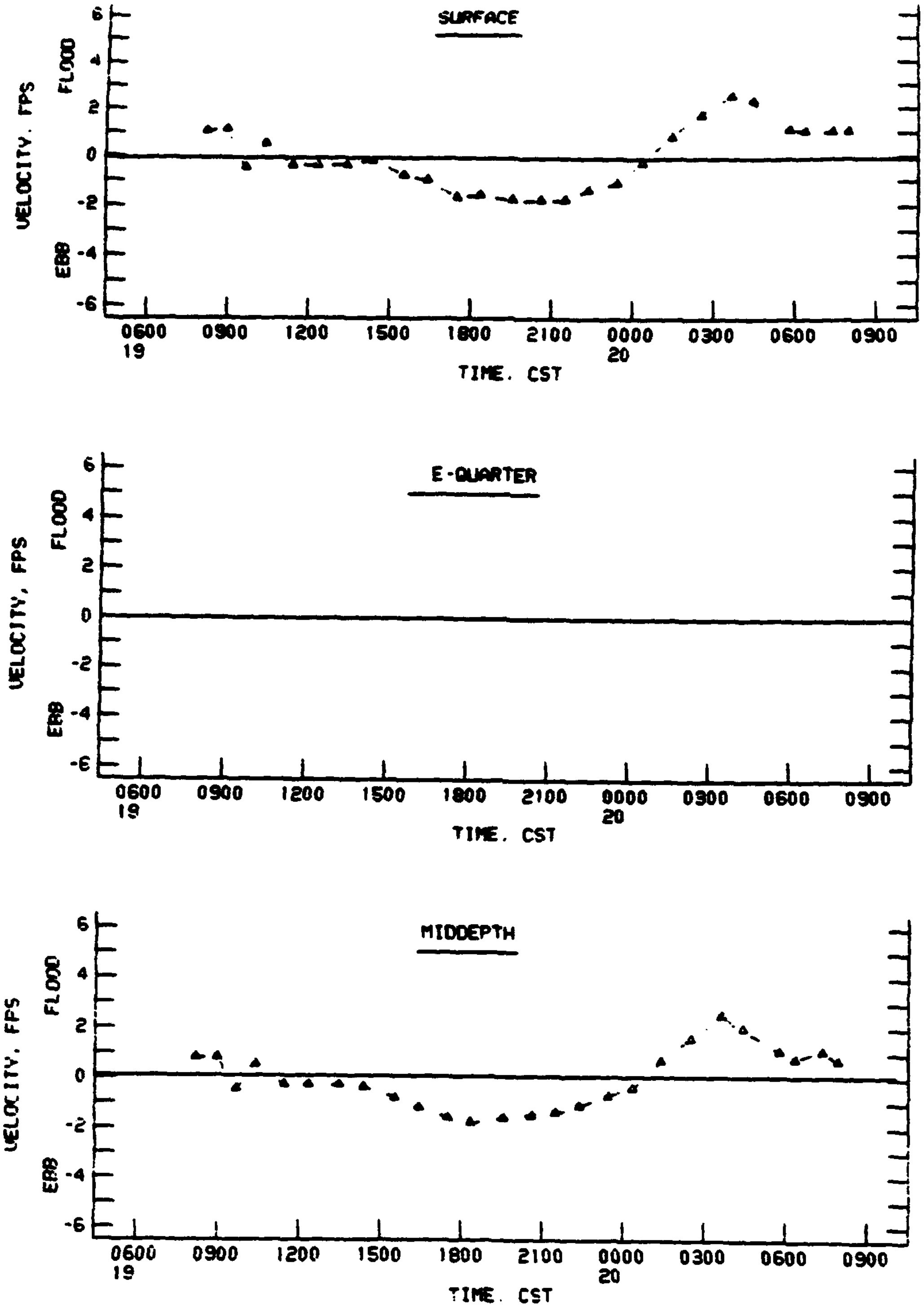
19-20 JULY 1990

Plate 24



VELOCITIES AT STATION R3.0C
THREE-QUARTER DEPTH AND BOTTOM

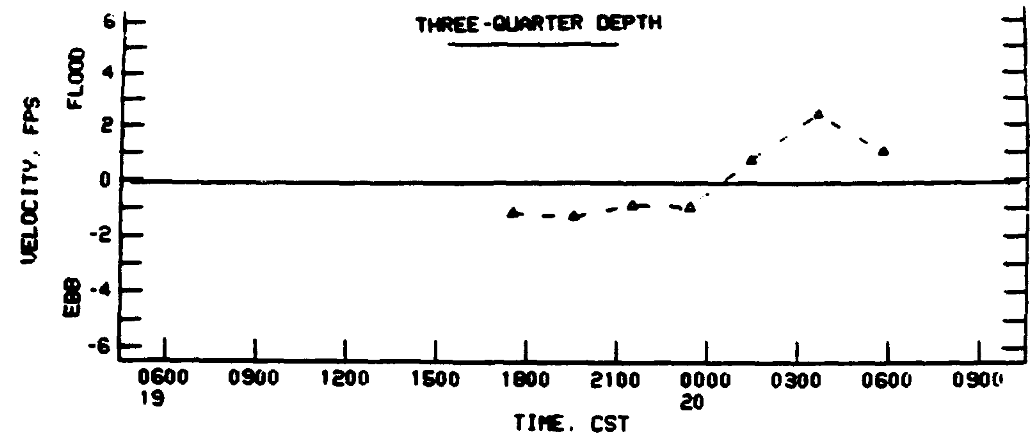
19-20 JULY 1990

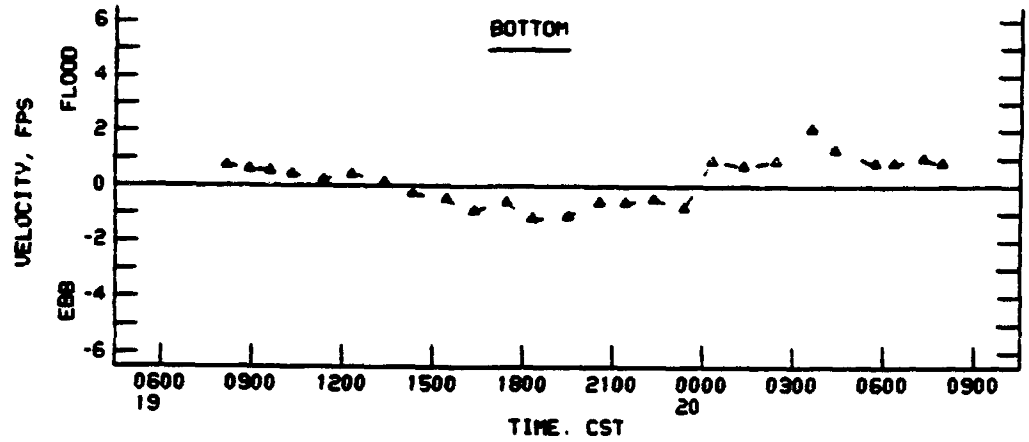


VELOCITIES AT STATION R3.0D
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990

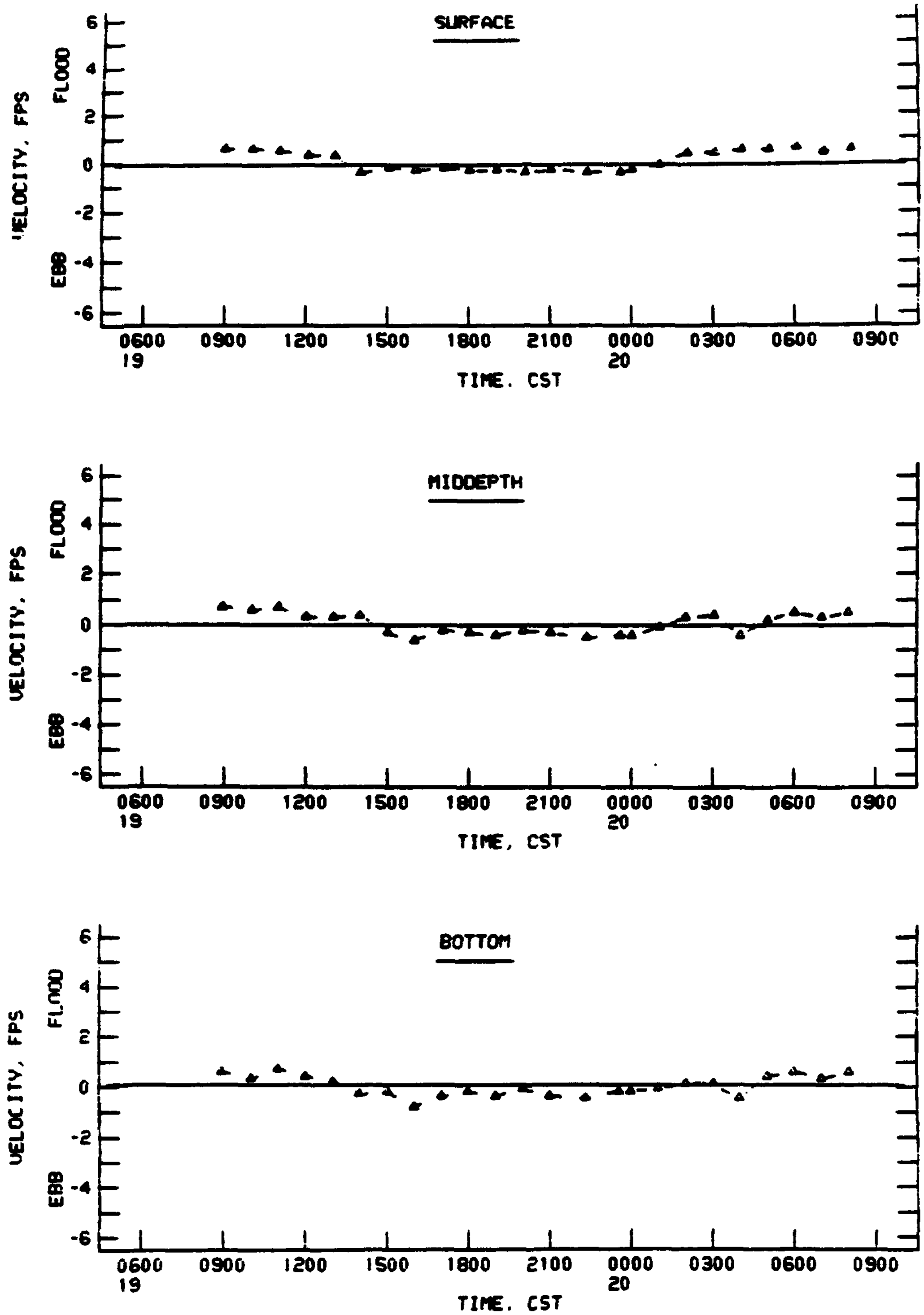
Plate 26





VELOCITIES AT STATION R3.0D
THREE-QUARTER DEPTH AND BOTTOM

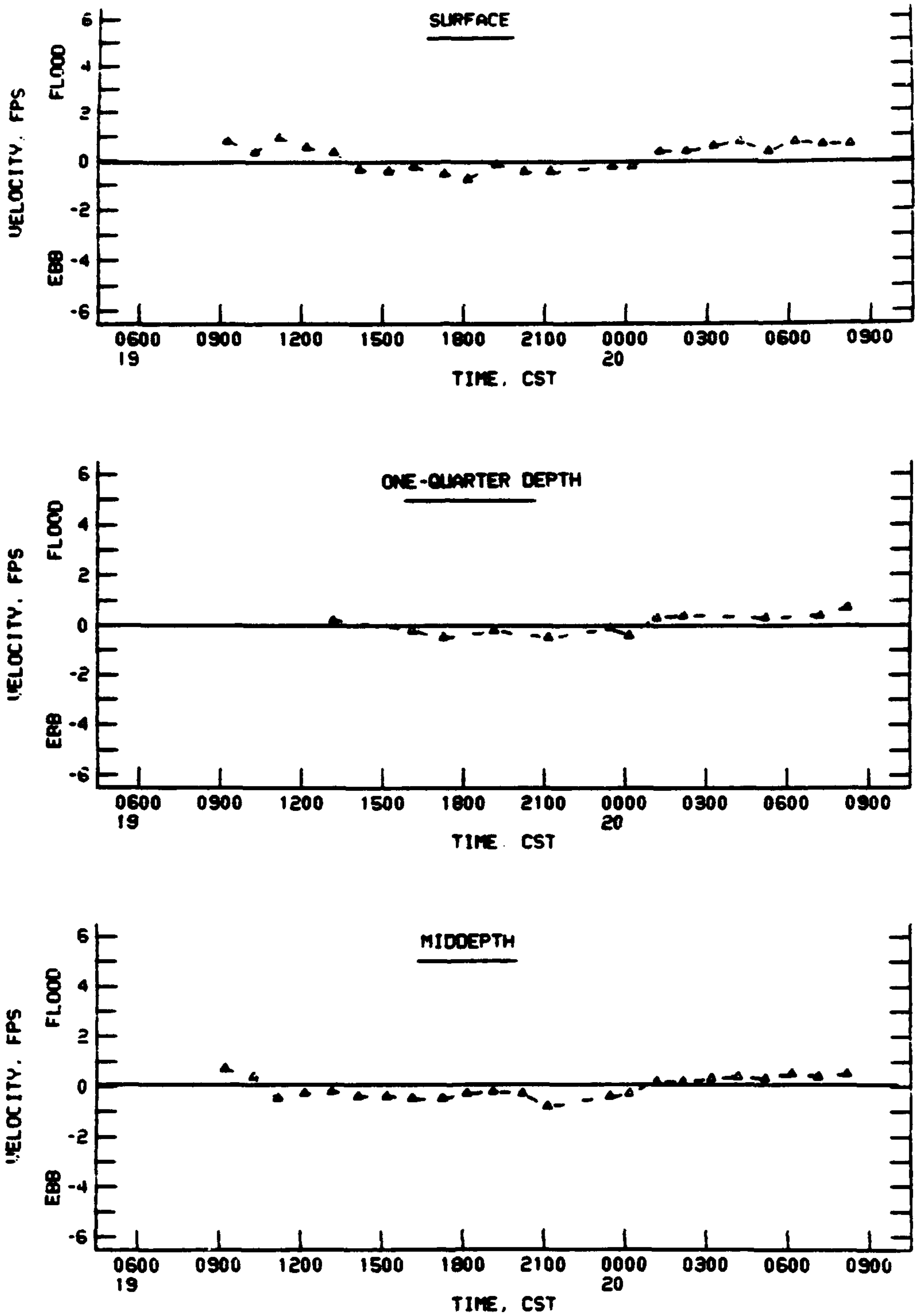
19-20 JULY 1990



VELOCITIES AT STATION R4.0A SURFACE, MIDDEPTH, AND BOTTOM

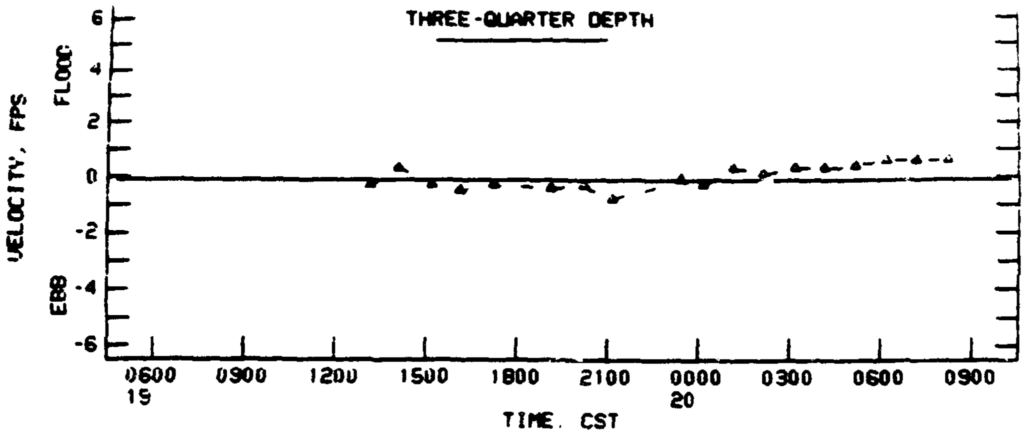
19-20 JULY 1990

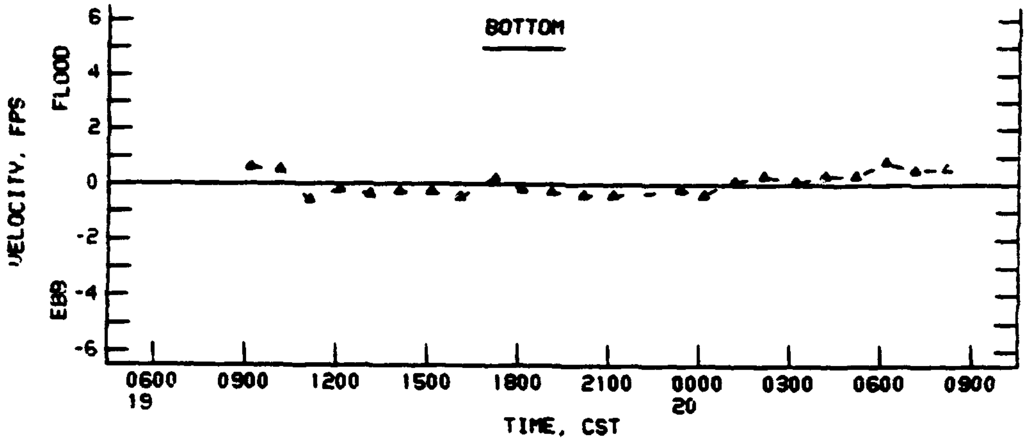
Plate 28



VELOCITIES AT STATION R4.0B
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

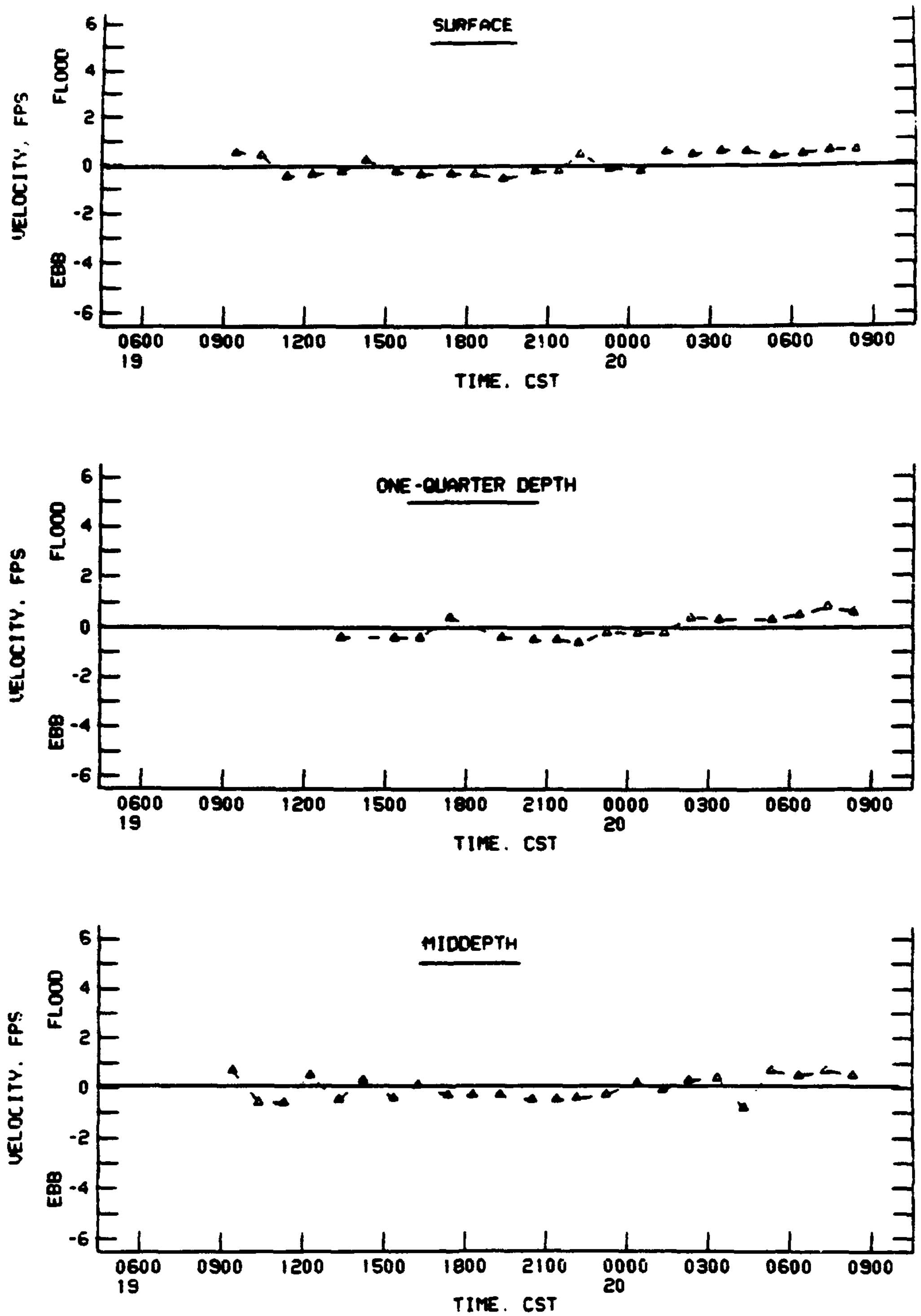
19-20 JULY 1990





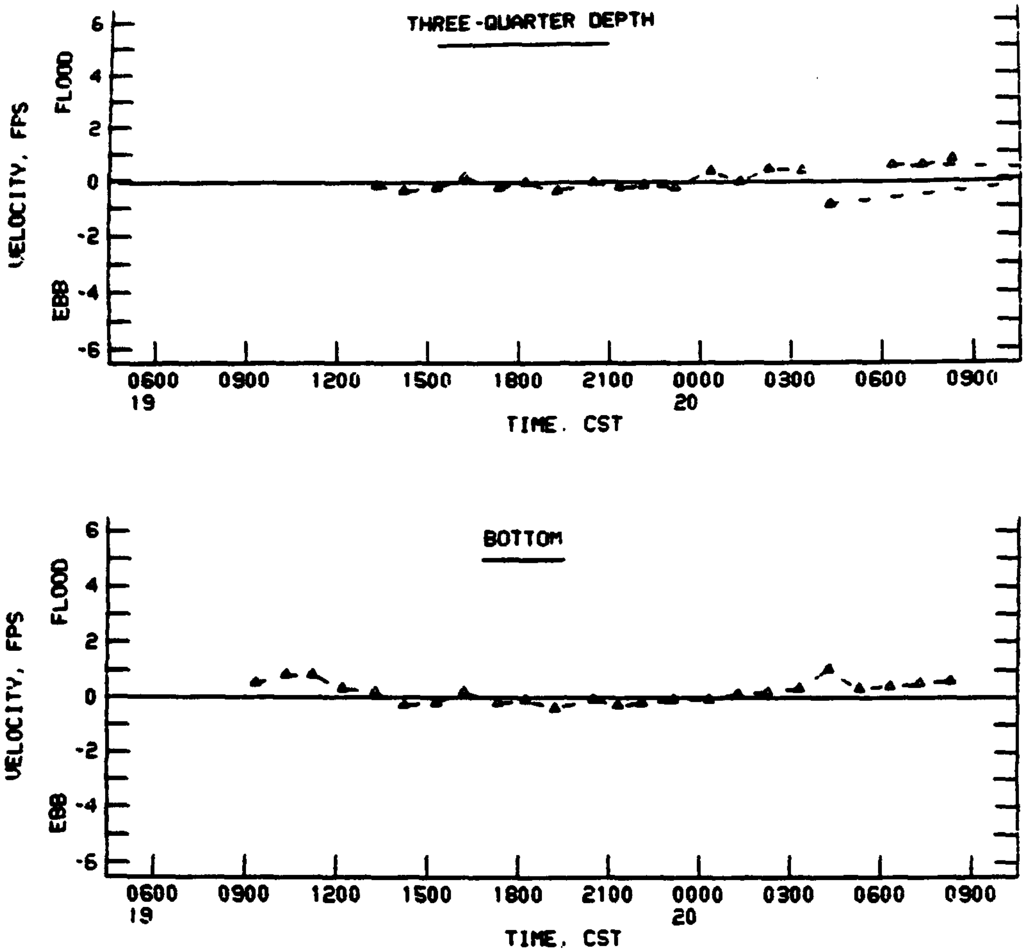
VELOCITIES AT STATION R4.0B
THREE-QUARTER DEPTH AND BOTTOM

19-20 JULY 1990



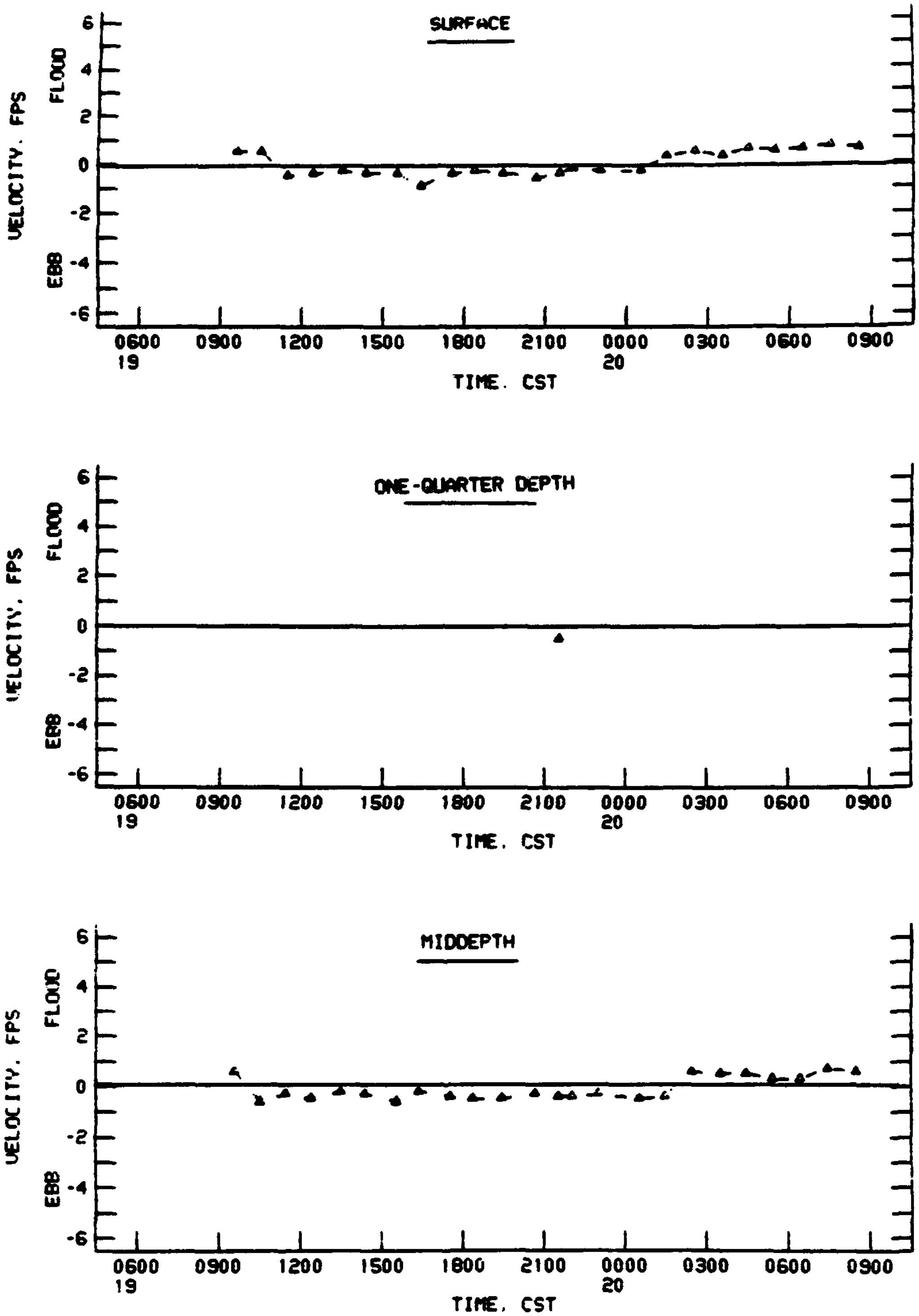
VELOCITIES AT STATION R4.0C
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990



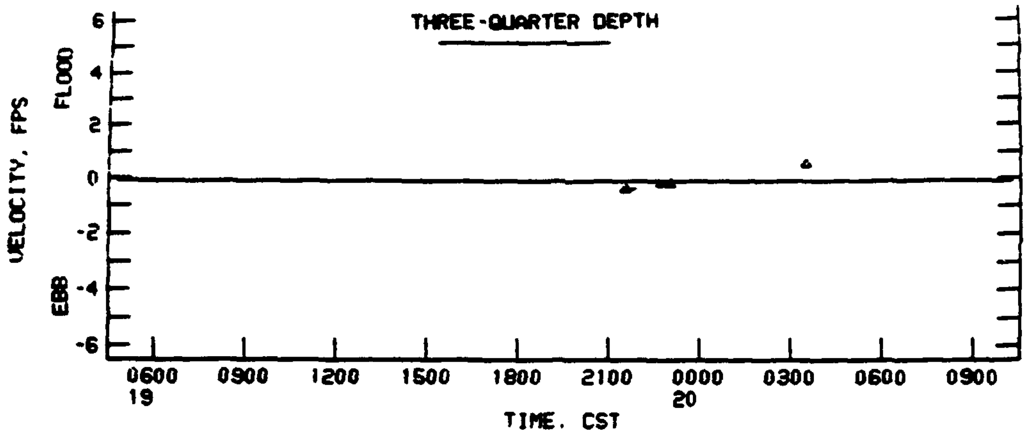
VELOCITIES AT STATION R4.0C
THREE-QUARTER DEPTH AND BOTTOM

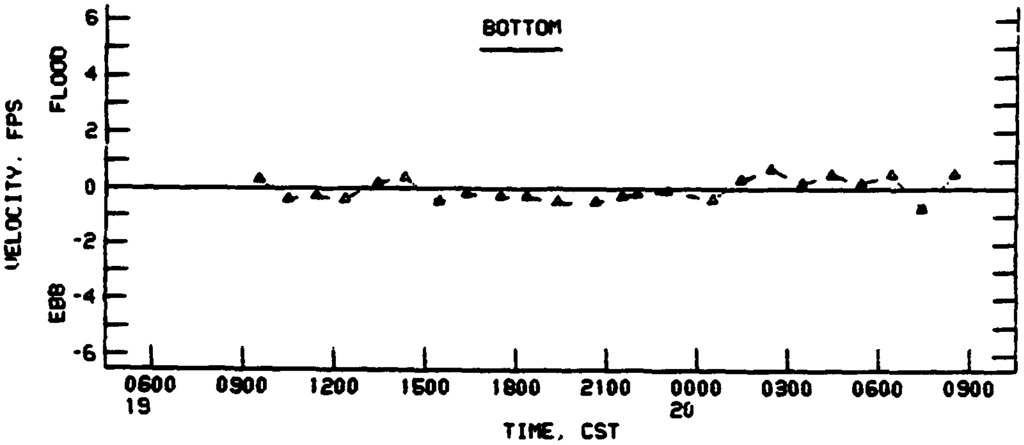
19-20 JULY 1990



VELOCITIES AT STATION R4.0D
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

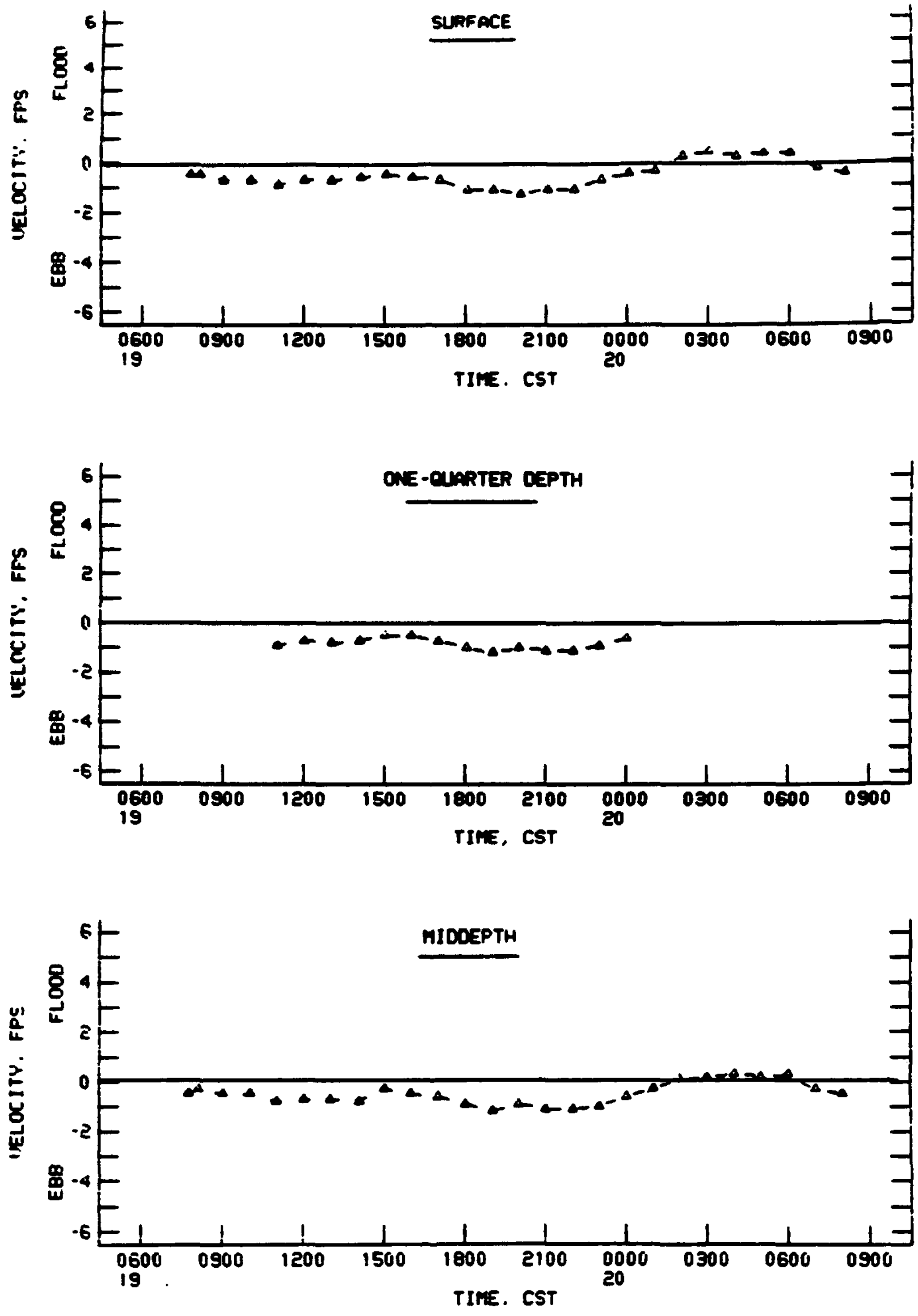
19-20 JULY 1990





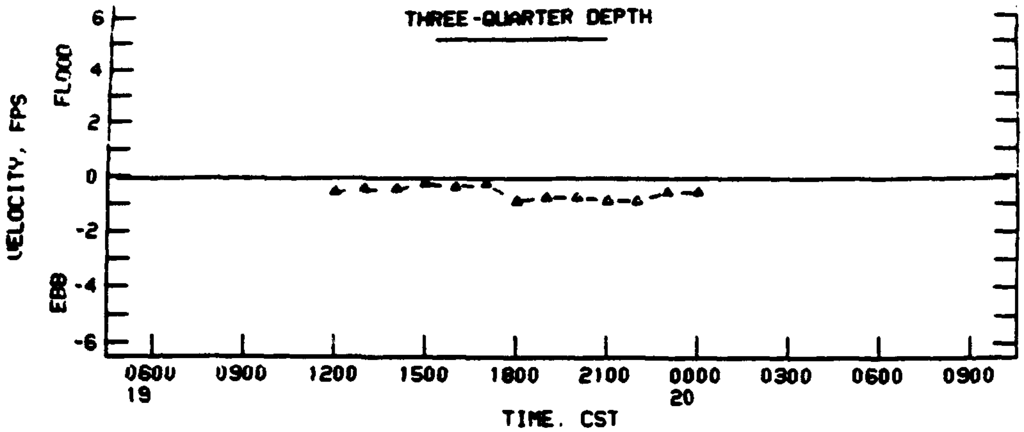
VELOCITIES AT STATION R4.0D
THREE-QUARTER DEPTH AND BOTTOM

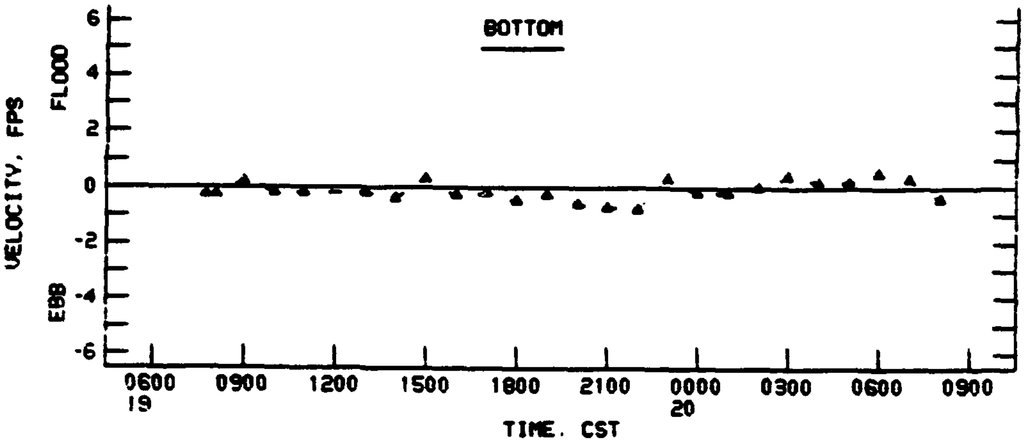
19-20 JULY 1990



VELOCITIES AT STATION R5.0A
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

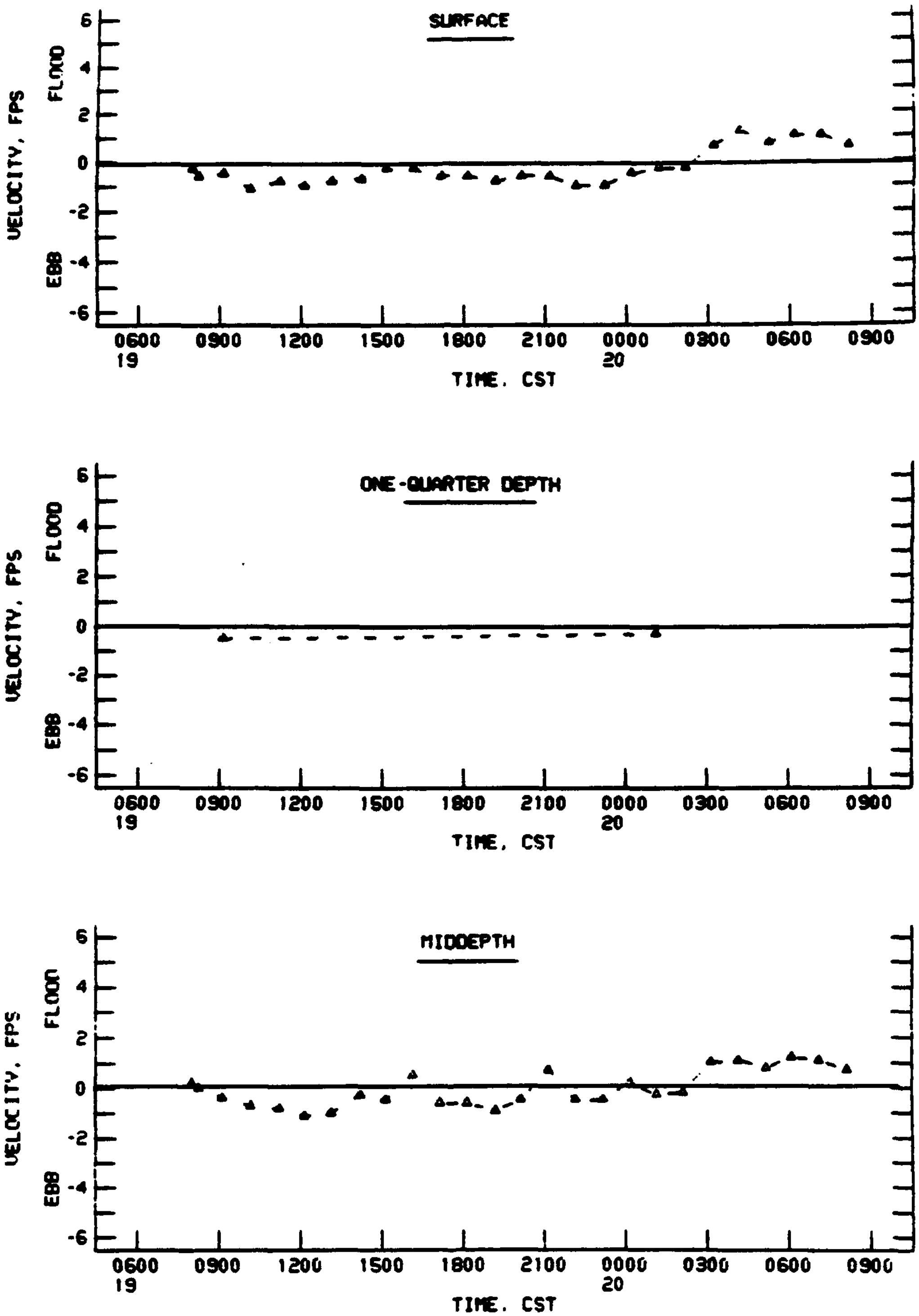
19-20 JULY 1990





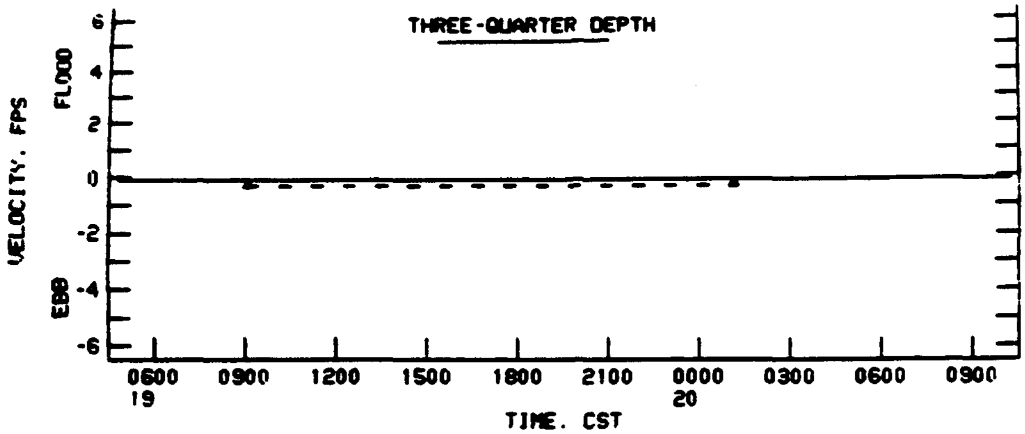
VELOCITIES AT STATION R5.0A
THREE-QUARTER DEPTH AND BOTTOM

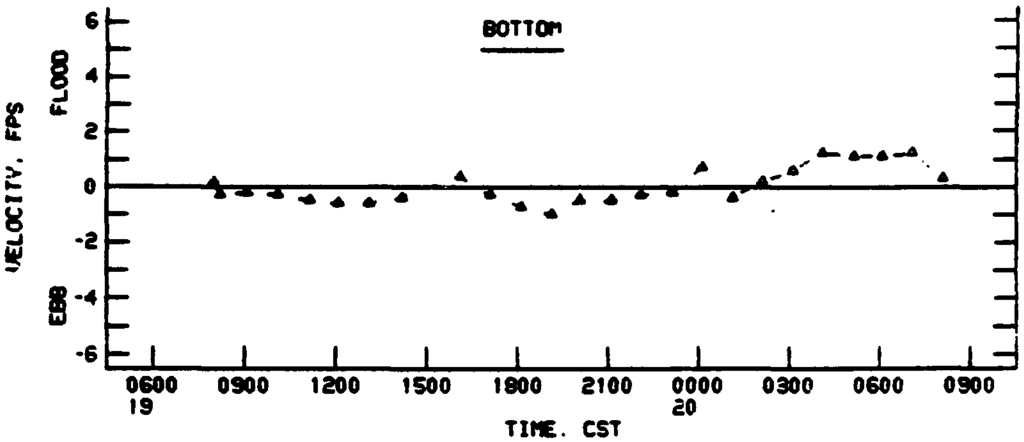
19-20 JULY 1990



VELOCITIES AT STATION R5.0D
SURFACE, ONE-QUARTER DEPTH, AND MIDDEPTH

19-20 JULY 1990

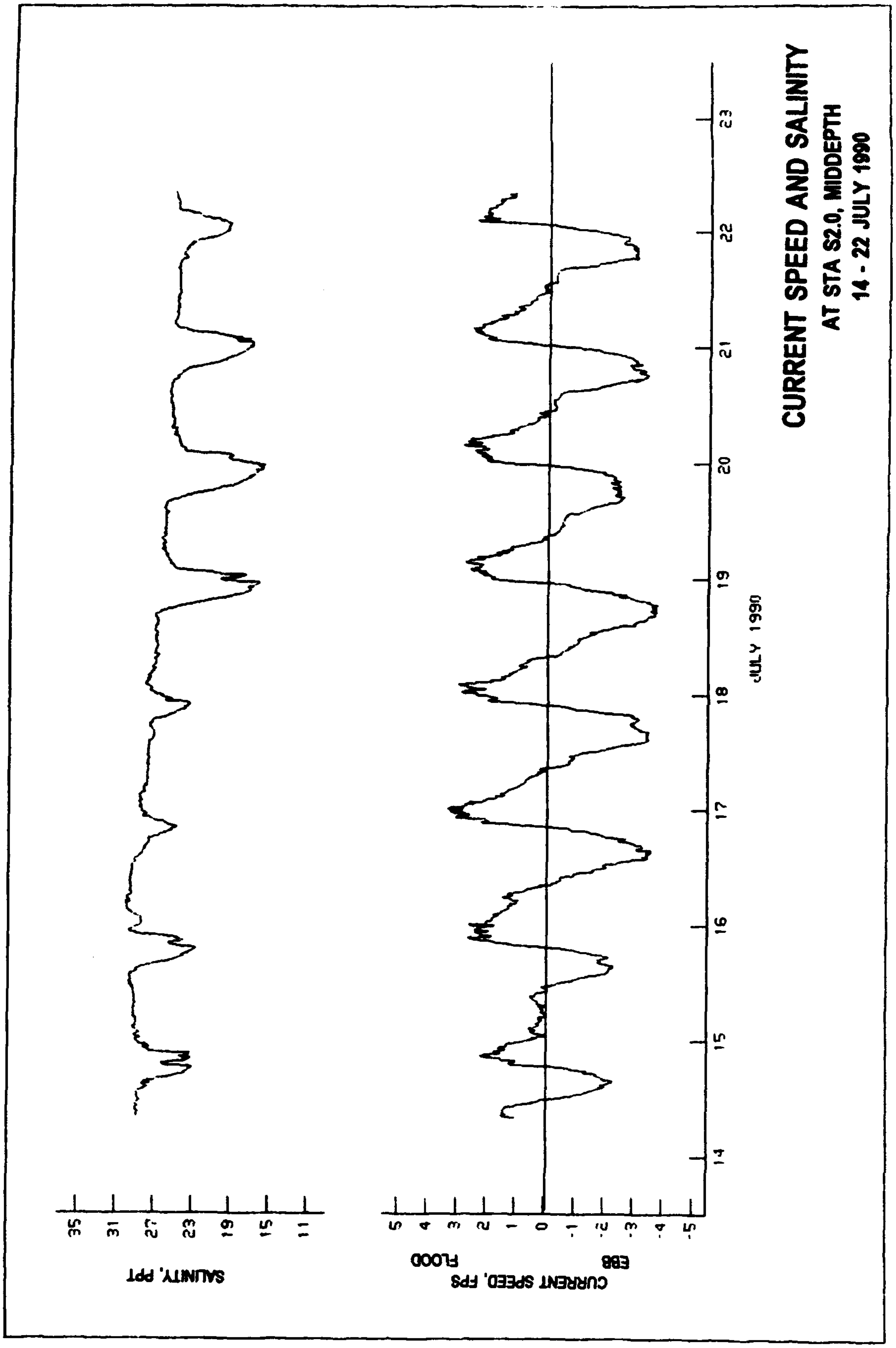




VELOCITIES AT STATION R5.0D
THREE-QUARTER DEPTH AND BOTTOM

19-20 JULY 1990

Plate 38



CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
14 - 22 JULY 1990
SALINITY, PPT
35
31
27
23
19
15
11
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
14
15
16
17
18
19
20
21
22
23
JULY 1990

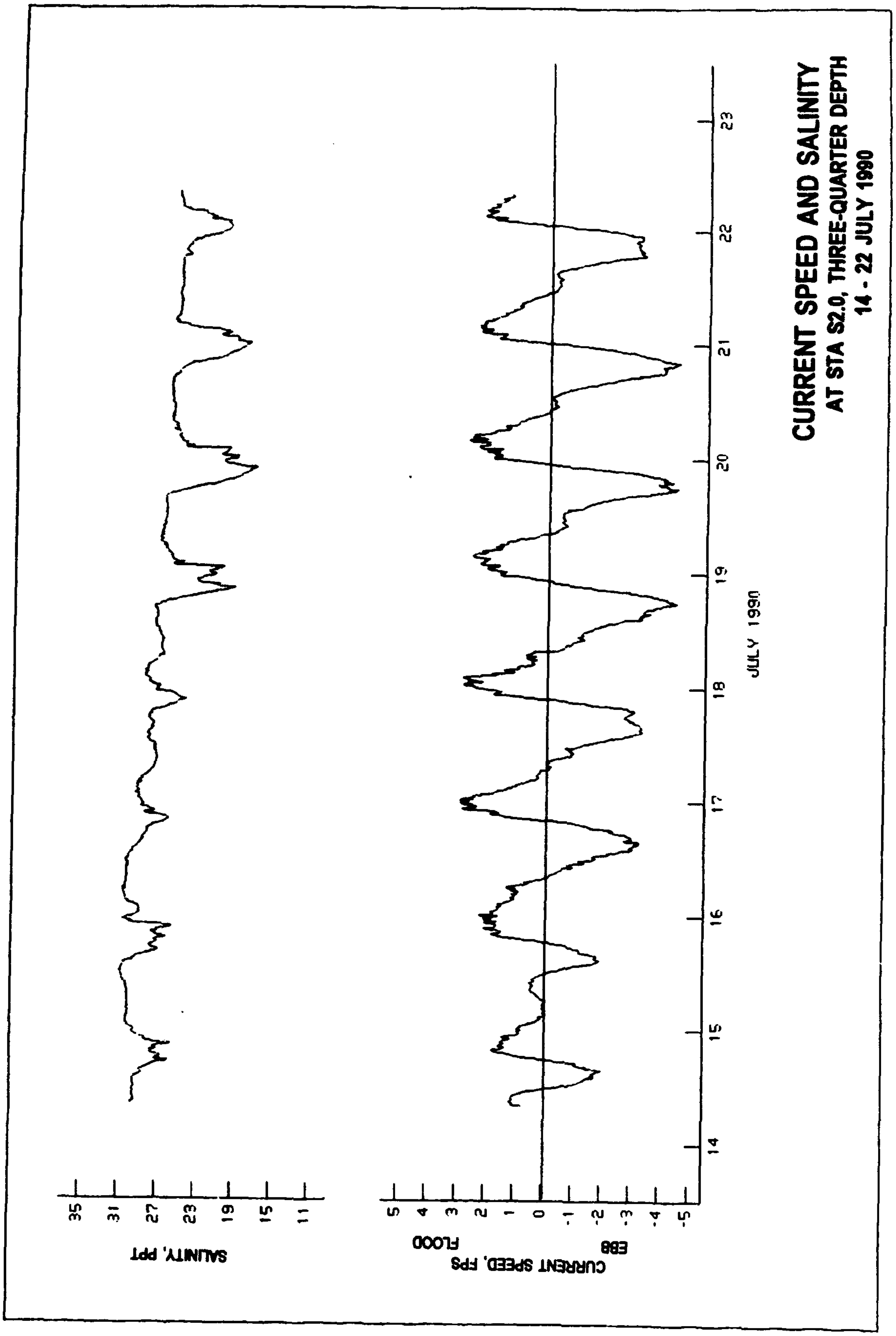
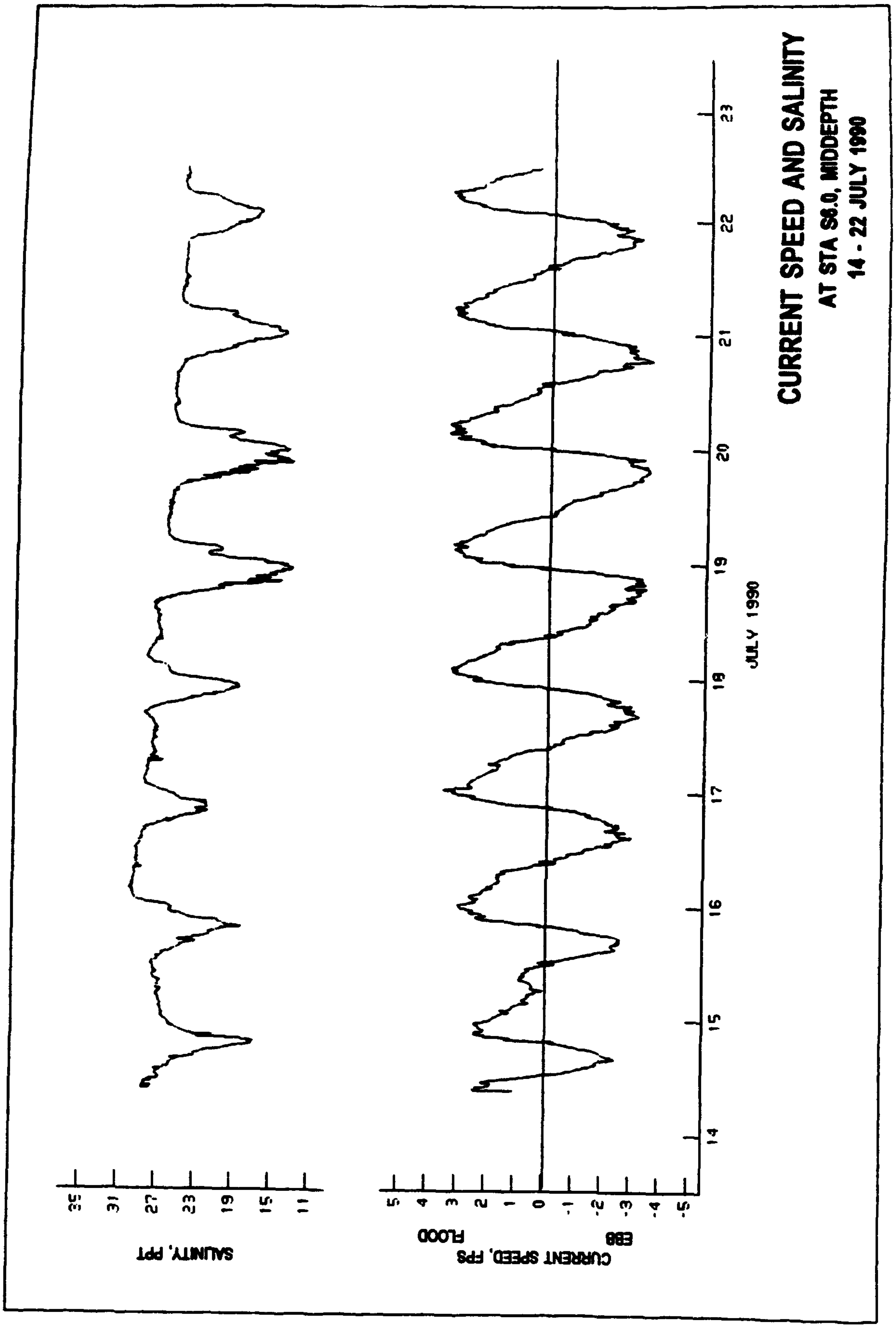

CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990
SALINITY, PPT
35
31
27
23
19
15
11
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
14
15
16
17
18
19
20
21
22
23
JULY 1990

Plate 40


CURRENT SPEED AND SALINITY
AT STA S6.0, MIDDEPTH
14 - 22 JULY 1990
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
JULY 1990

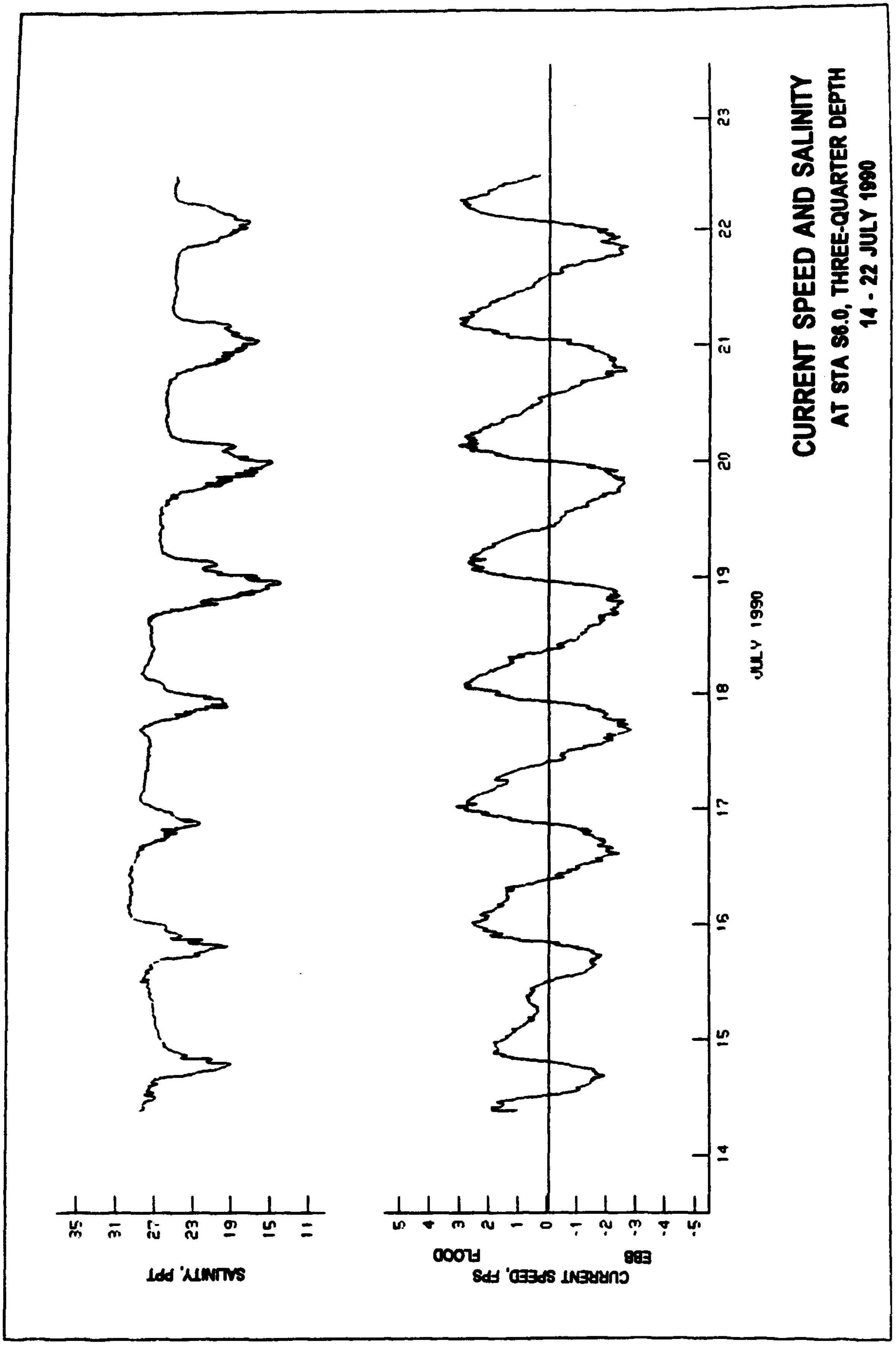
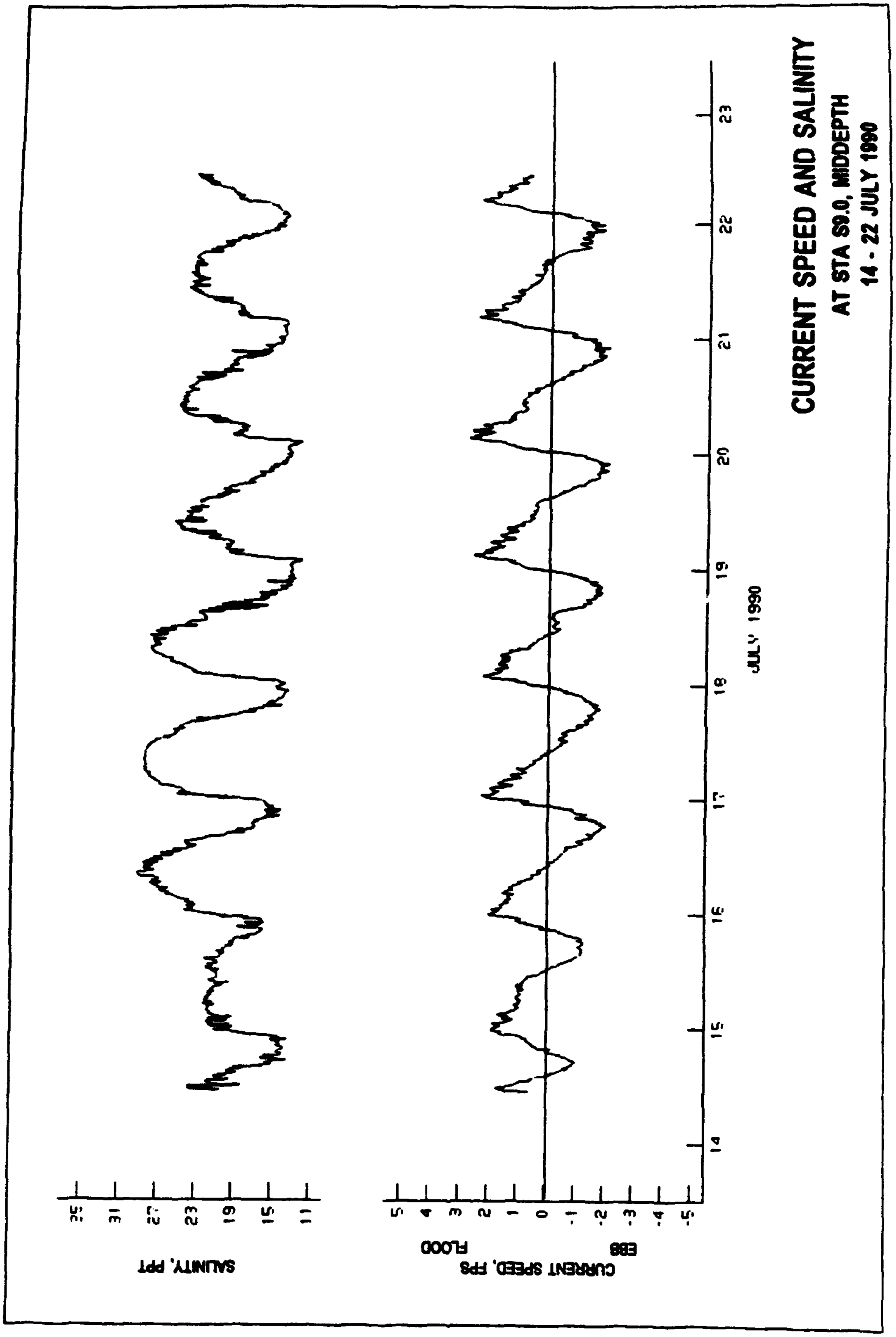

CURRENT SPEED AND SALINITY
AT STA S6.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
JULY 1990

Plate 42



CURRENT SPEED AND SALINITY
AT STA S9.0, MIDDEPTH
14 - 22 JULY 1990

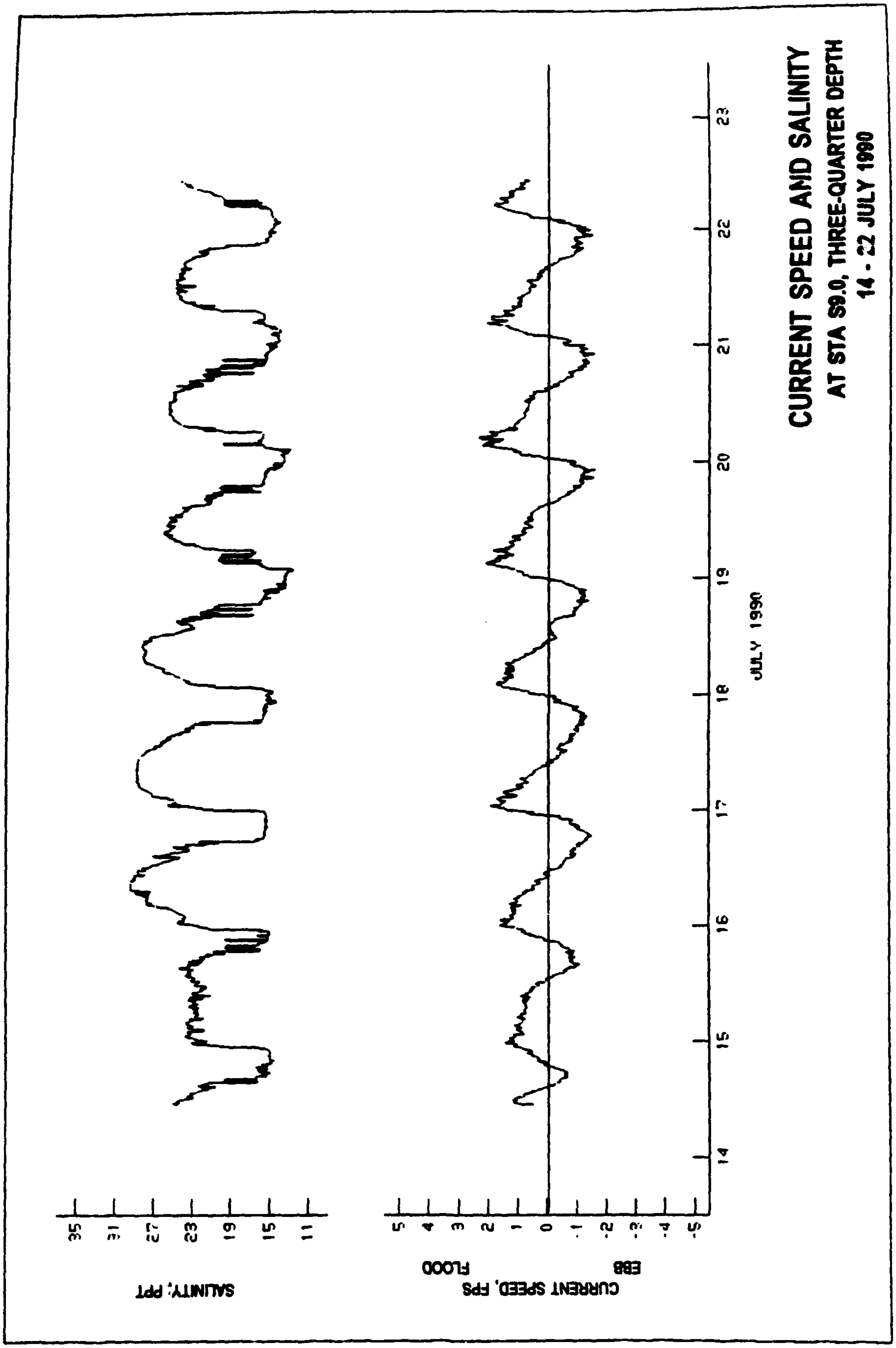

CURRENT SPEED AND SALINITY
AT STA S9.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990
SALINITY, PPT
35
31
27
23
19
15
11
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
14
15
16
17
18
19
20
21
22
23
JULY 1990

Plate 44

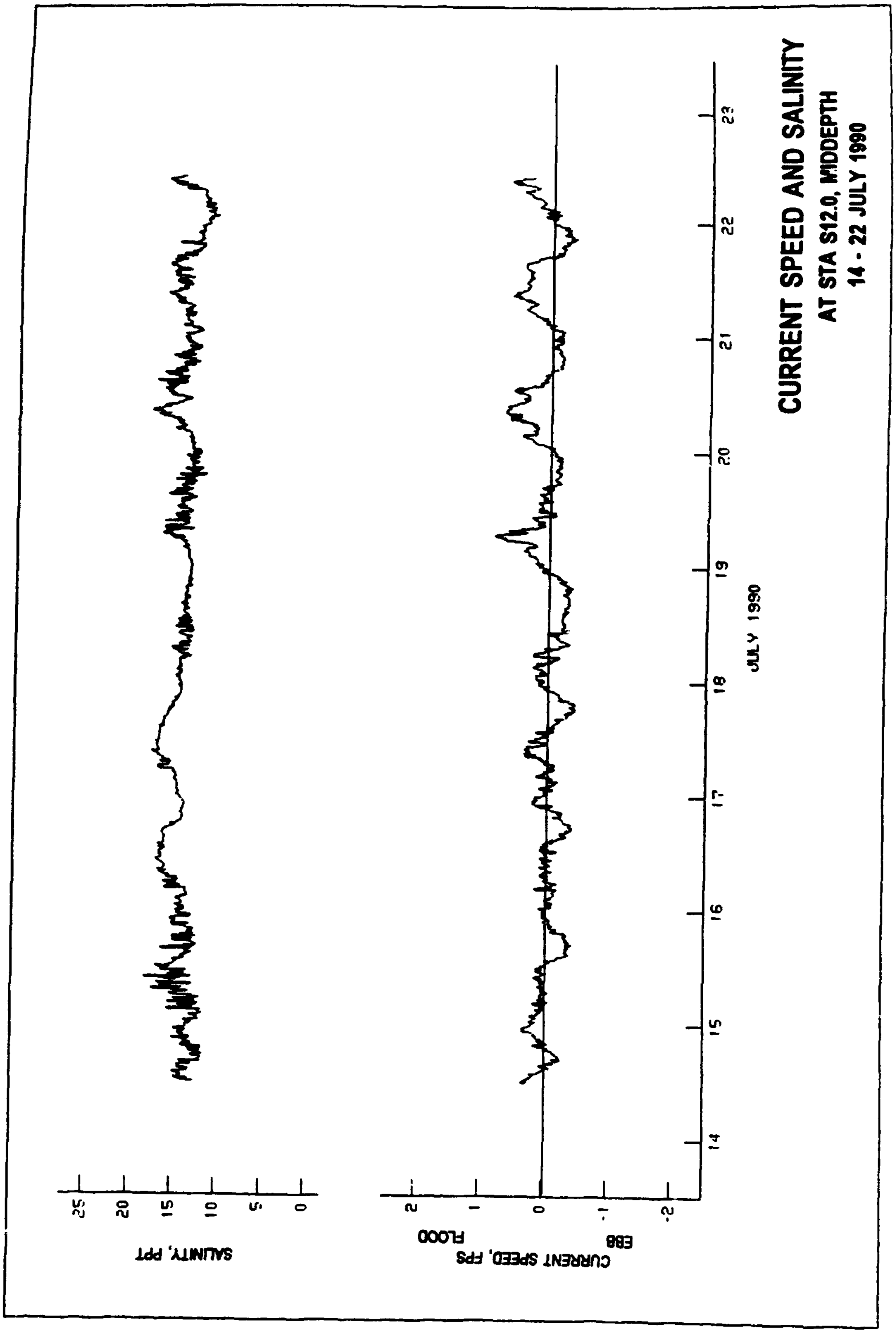
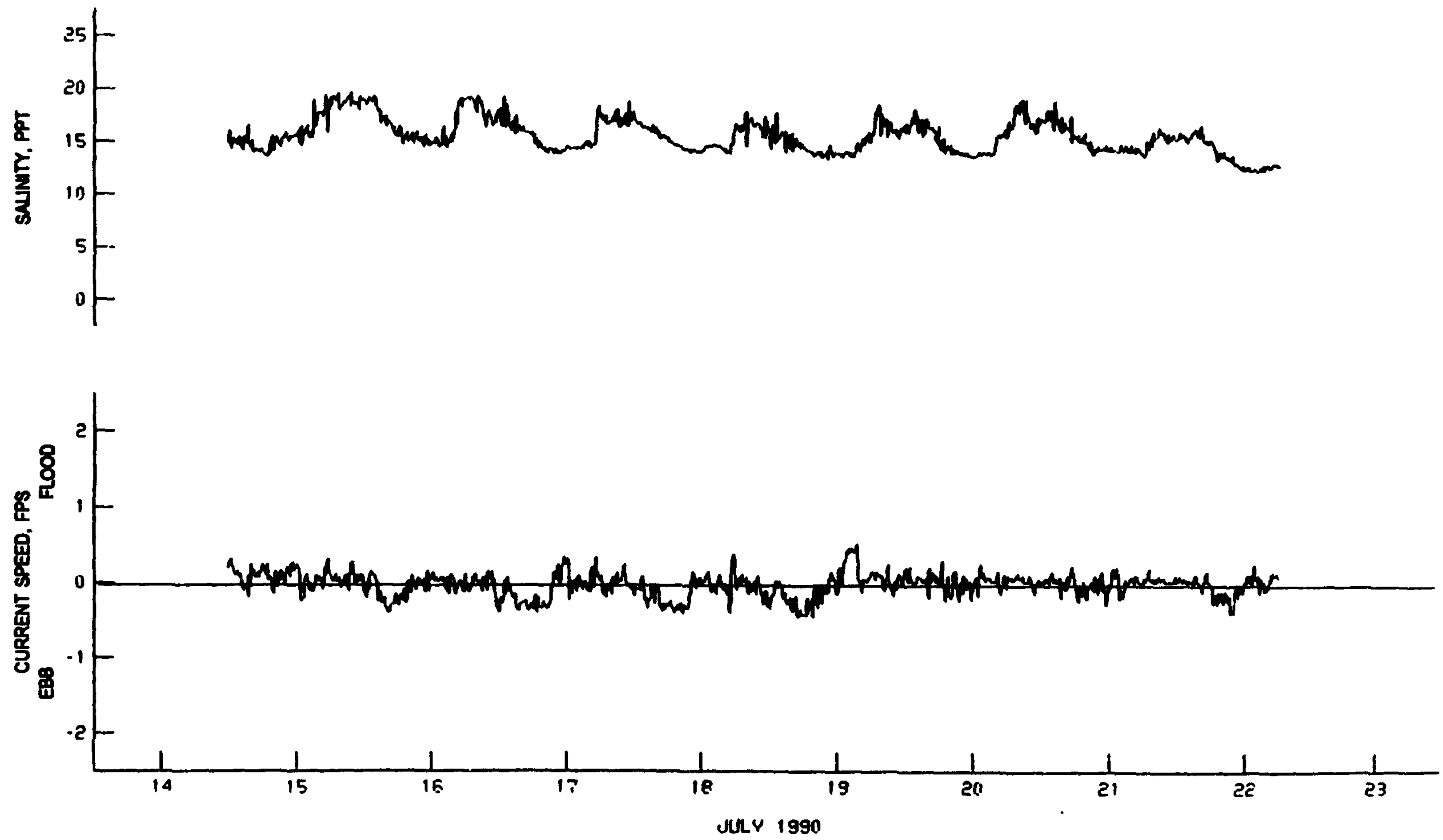

CURRENT SPEED AND SALINITY
AT STA S12.0, MIDDEPTH
14 - 22 JULY 1990
SALINITY, PPT
25
20
15
10
5
0
CURRENT SPEED, FPS
FLOOD
EBB
2
1
0
-1
-2
14
15
16
17
18
19
20
21
22
23
JULY 1990

Plate 45



CURRENT SPEED AND SALINITY
AT STA S12.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990

Plate 46

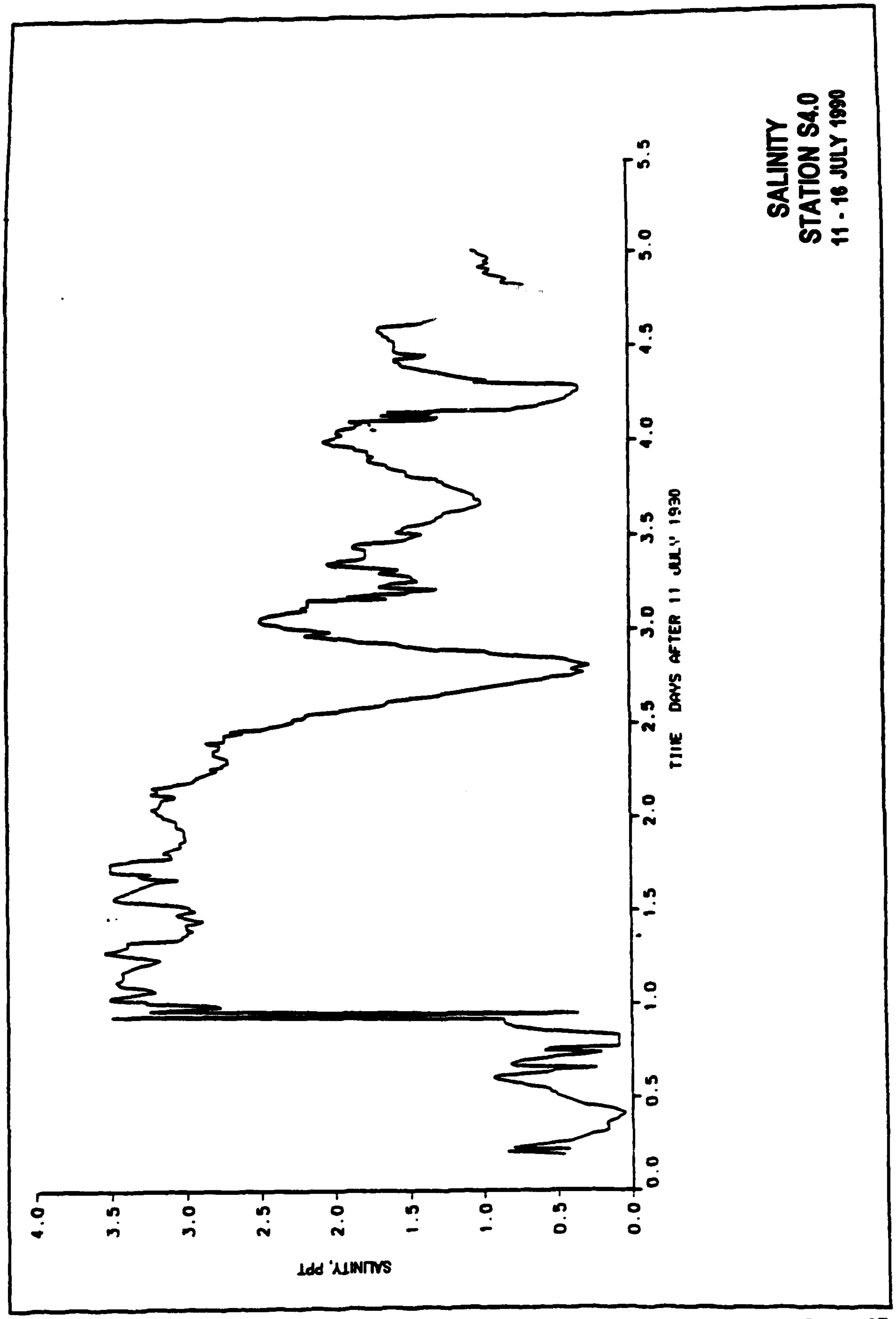

SALINITY
STATION S4.0
11 - 16 JULY 1990
SALINITY, PPT
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
TIME DAYS AFTER 11 JULY 1990
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5

Plate 47

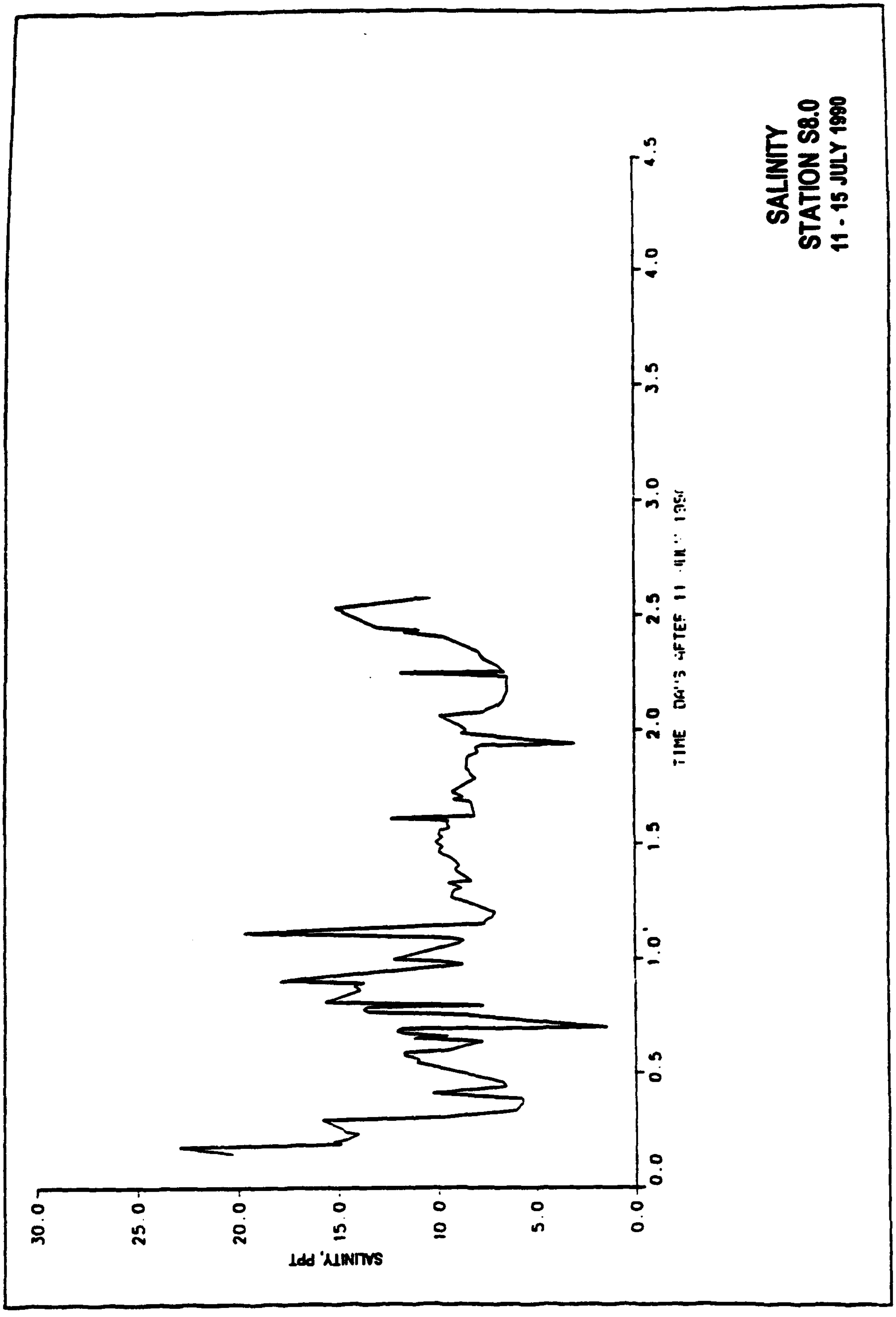

SALINITY
STATION S8.0
11 - 15 JULY 1990
SALINITY, PPT
0.0
5.0
10.0
15.0
20.0
25.0
30.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5

Plate 48

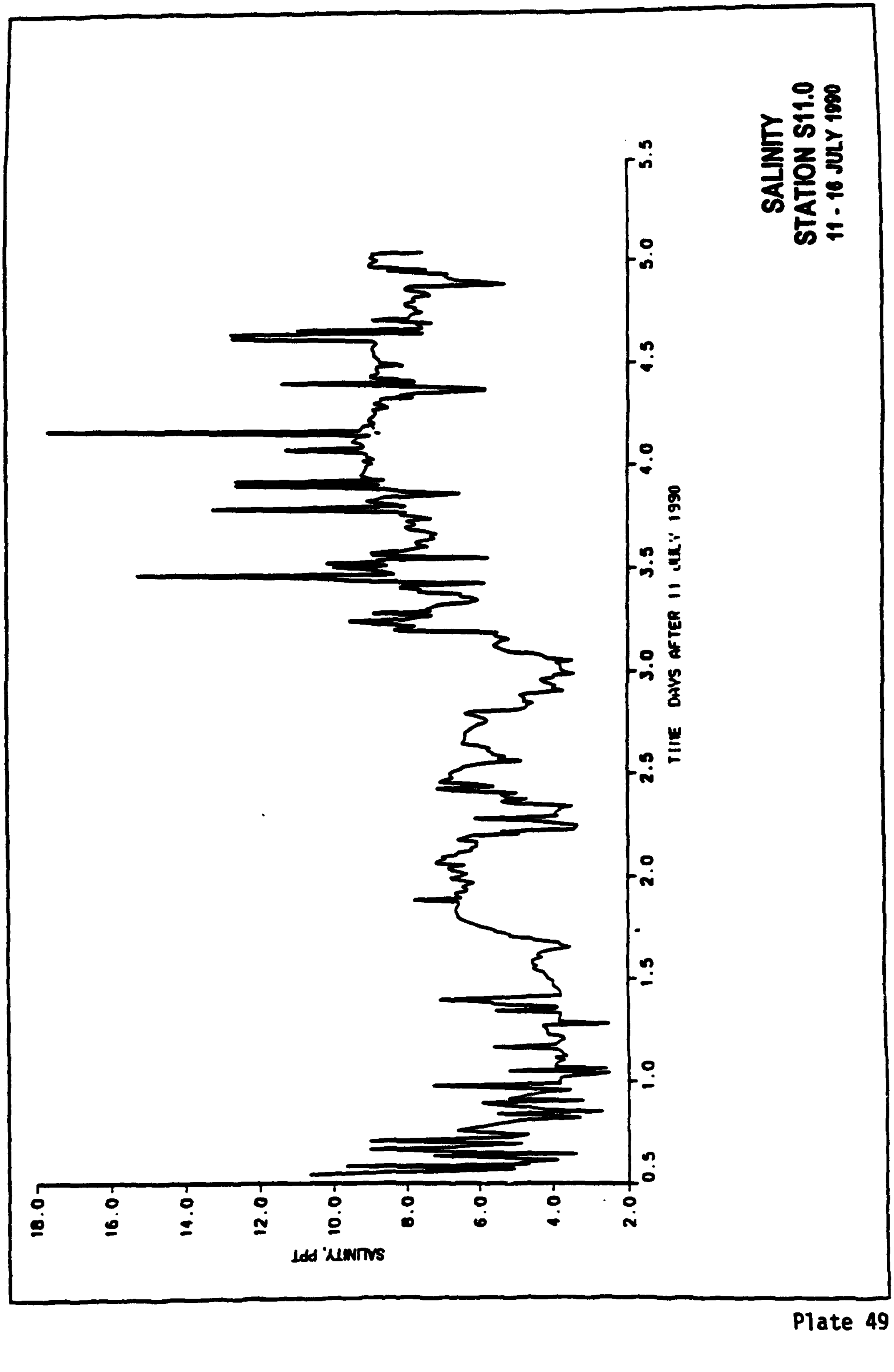

SALINITY
STATION S11.0
11 - 16 JULY 1990
SALINITY, PPT
TIME DAYS AFTER 11 JULY 1990
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5

Plate 49

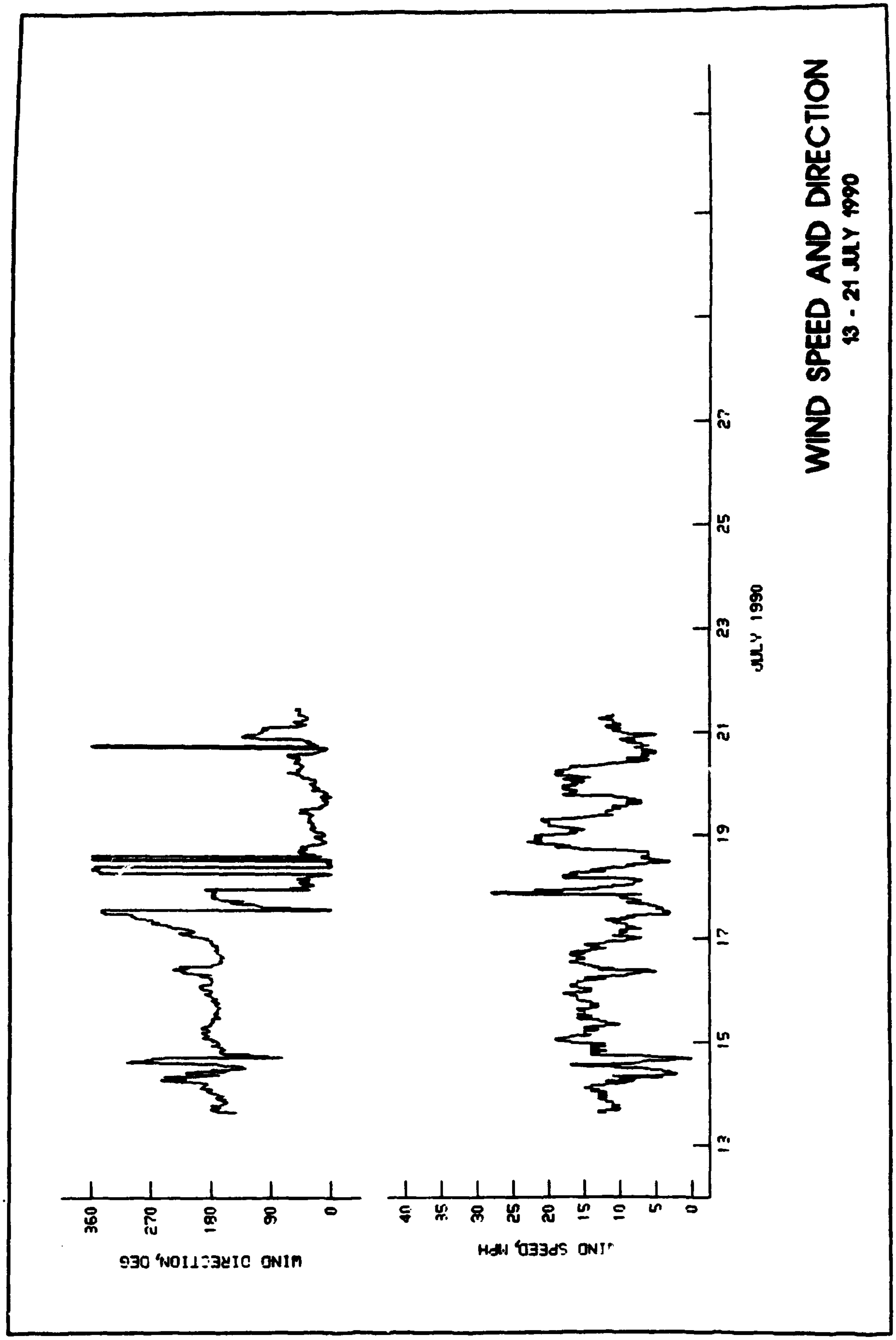
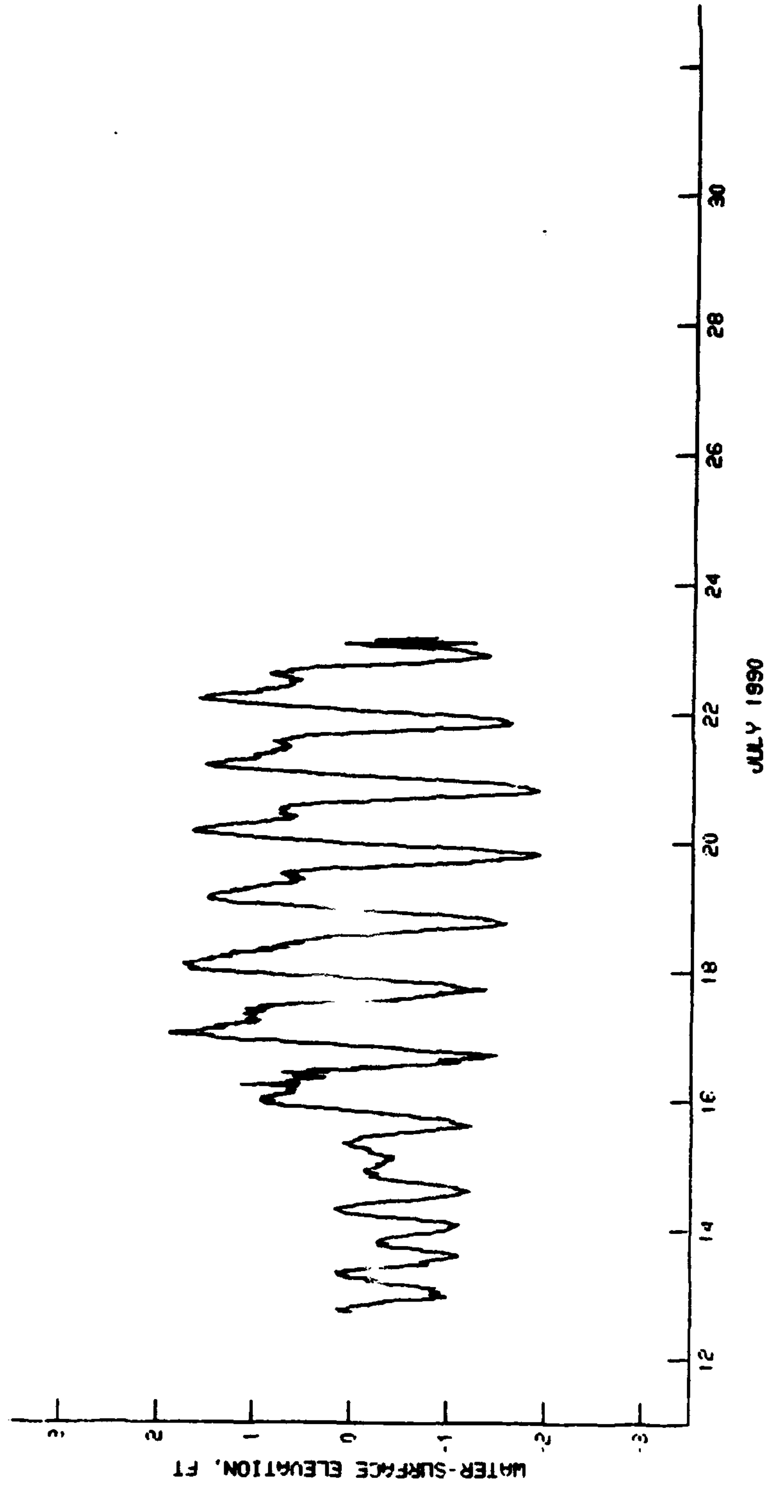
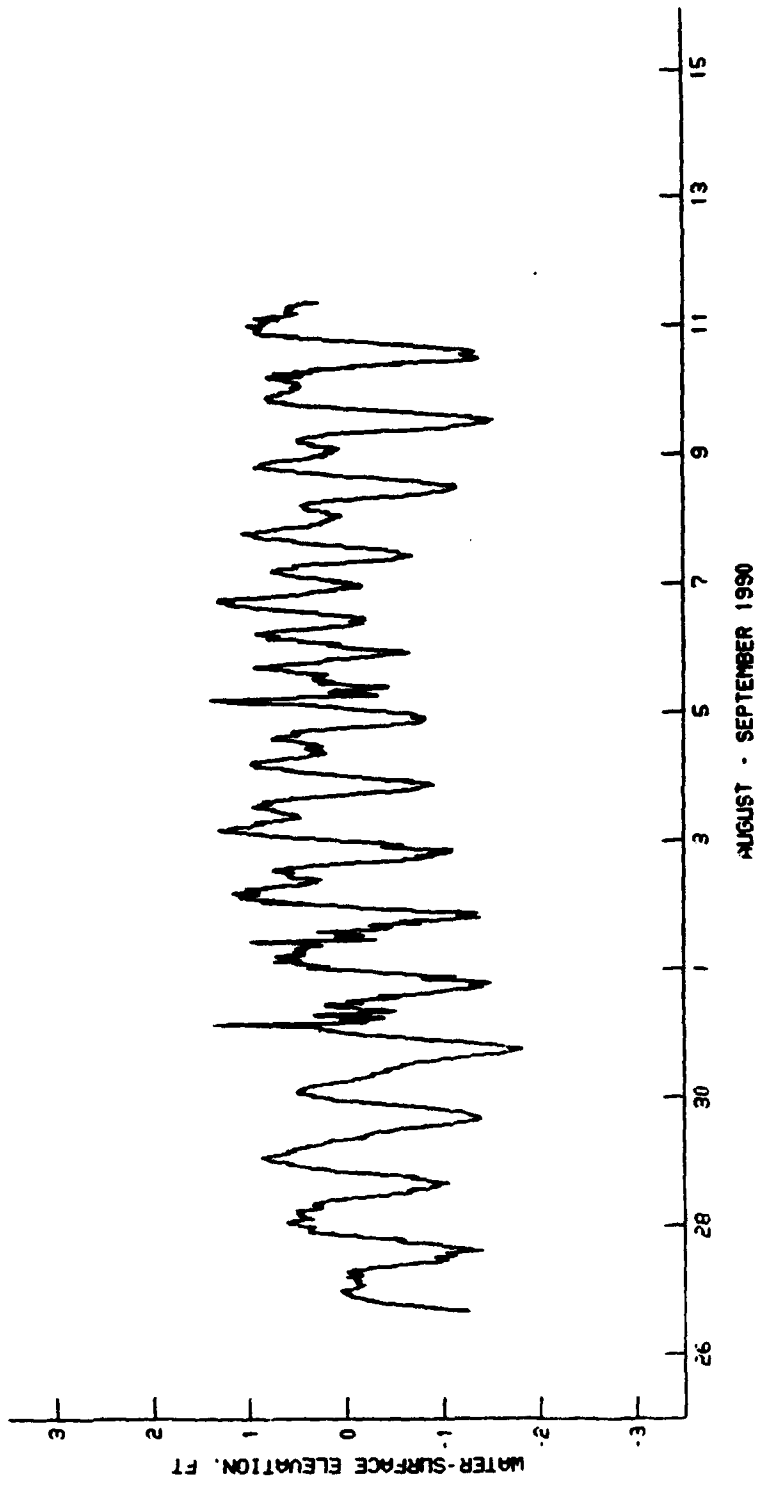

WIND SPEED AND DIRECTION
13 - 21 JULY 1990
JULY 1990
13
15
17
19
21
23
25
27
WIND DIRECTION, DEG
360
270
180
90
0
WIND SPEED, MPH
40
35
30
25
20
15
10
5
0

Plate 50



WATER-SURFACE ELEVATION*
AT STATION S1.0
12 - 23 JULY 1990

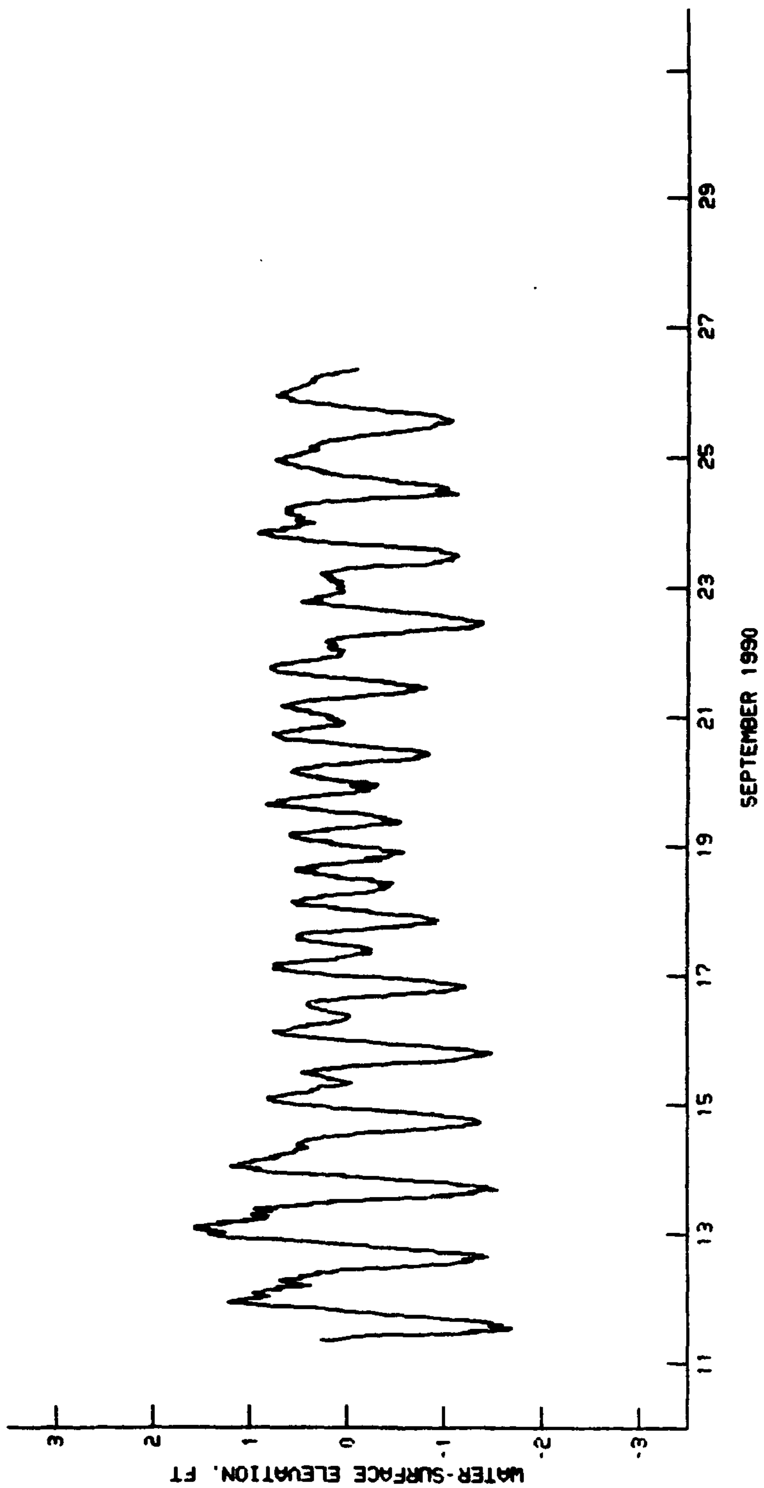
*MEAN WATER-SURFACE ELEVATION USED AS DATUM



WATER-SURFACE ELEVATION*
AT STATION S1.0
26 AUGUST - 11 SEPTEMBER 1990

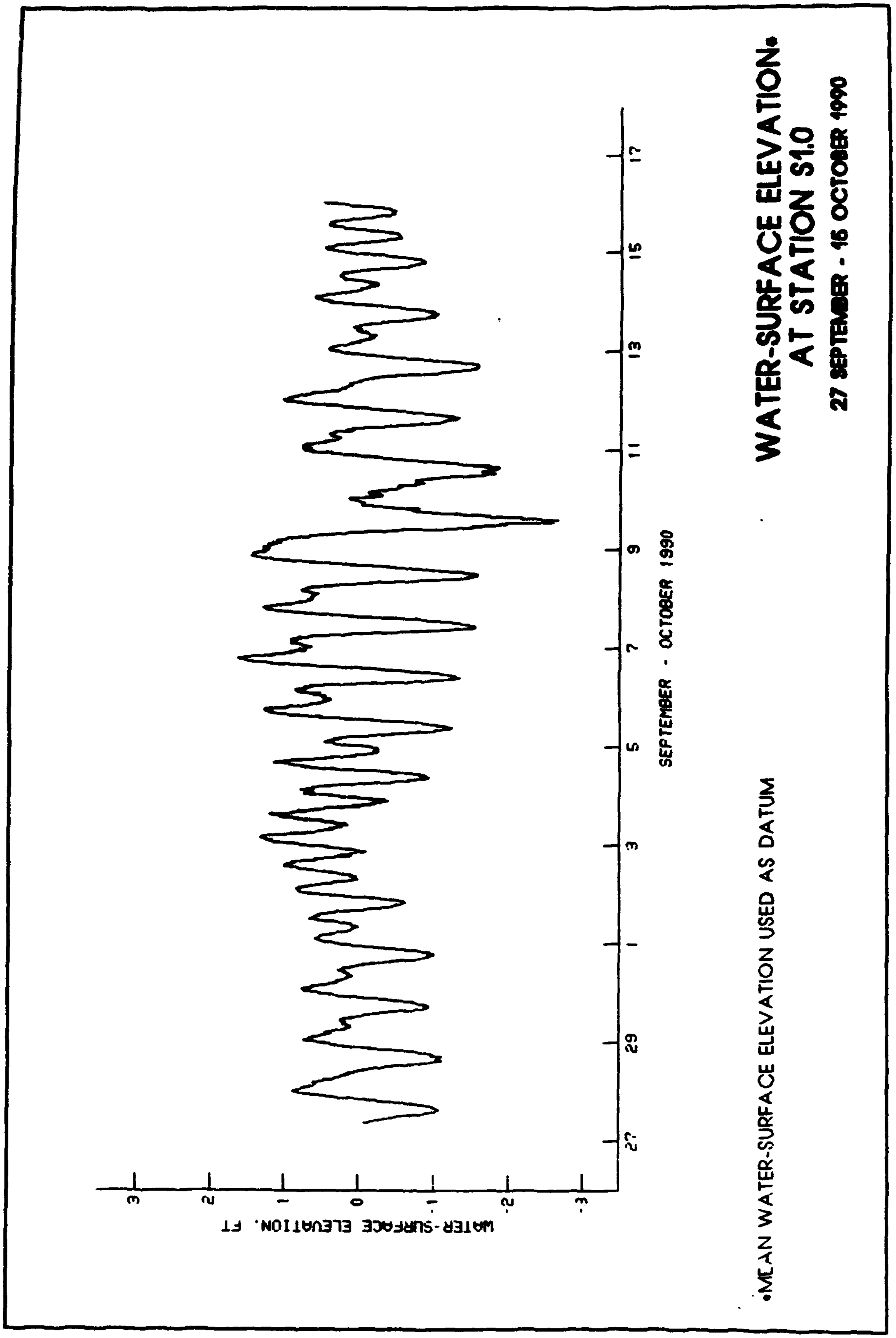
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

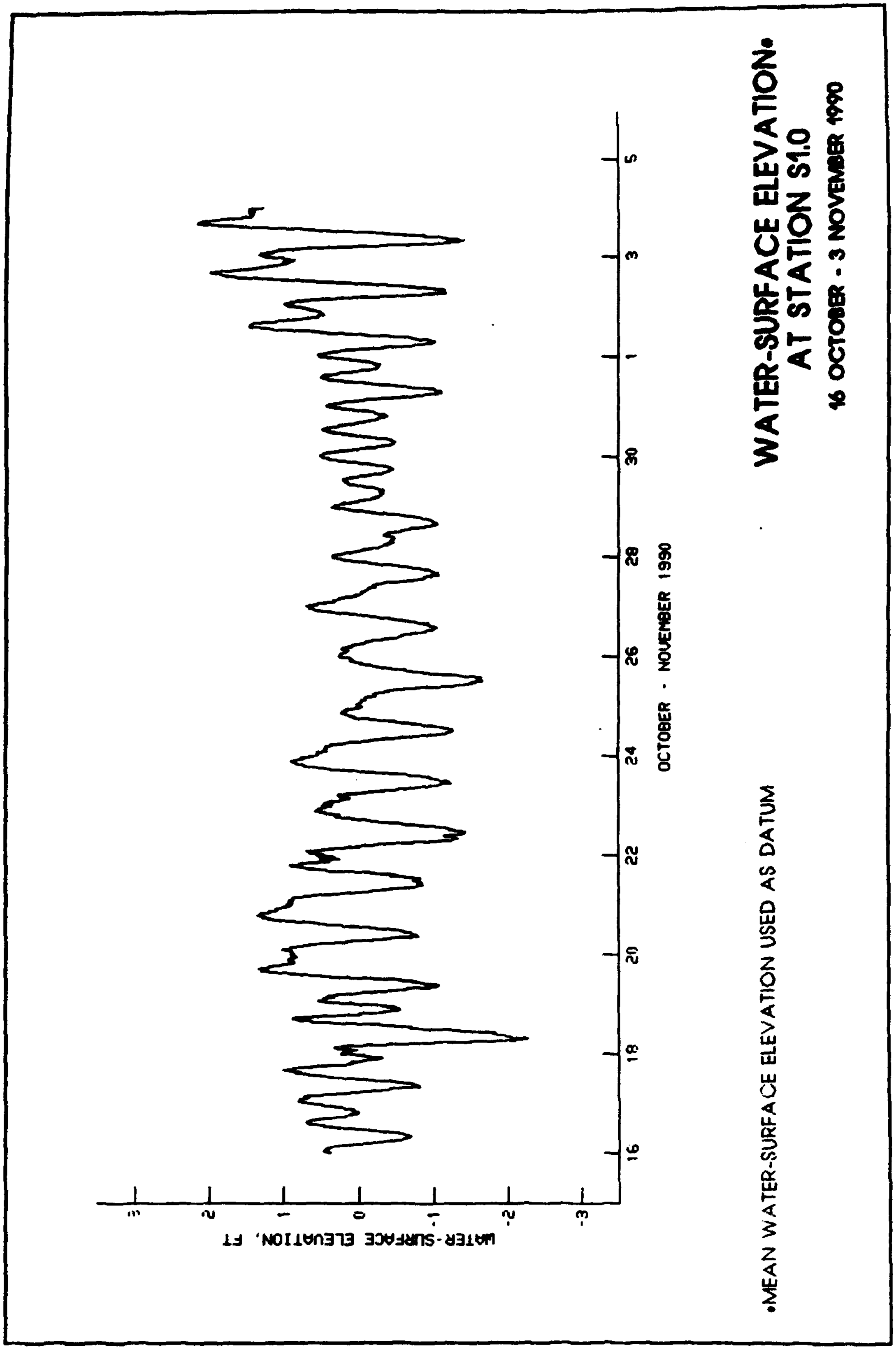
Plate 52

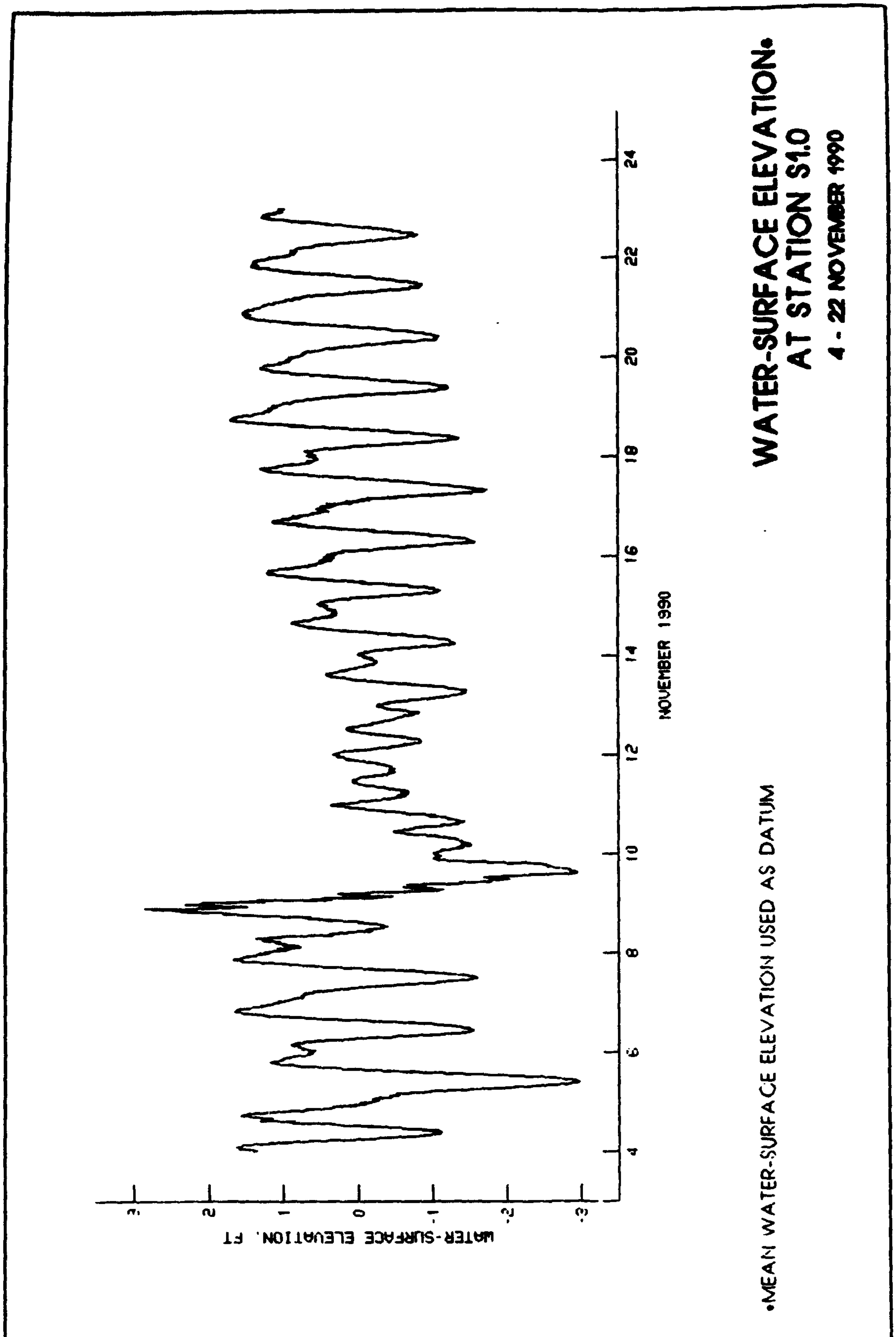


WATER-SURFACE ELEVATION*
AT STATION S1.0
11 - 26 SEPTEMBER 1990

*MEAN WATER-SURFACE ELEVATION USED AS DATUM


WATER-SURFACE ELEVATION*
AT STATION S1.0
27 SEPTEMBER - 16 OCTOBER 1990
WATER-SURFACE ELEVATION, FT
3
2
1
0
-1
-2
-3
27
29
1
3
5
7
9
11
13
15
17
SEPTEMBER - OCTOBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM


WATER-SURFACE ELEVATION*
AT STATION S1.0
16 OCTOBER - 3 NOVEMBER 1990
WATER-SURFACE ELEVATION, FT
3
2
1
0
-1
-2
-3
16
18
20
22
24
26
28
30
1
3
5
OCTOBER - NOVEMBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM



WATER-SURFACE ELEVATION*
AT STATION S1.0
4 - 22 NOVEMBER 1990
WATER-SURFACE ELEVATION, FT
NOVEMBER 1990
3
2
1
0
-1
-2
-3
4
6
8
10
12
14
16
18
20
22
24
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

Plate 56

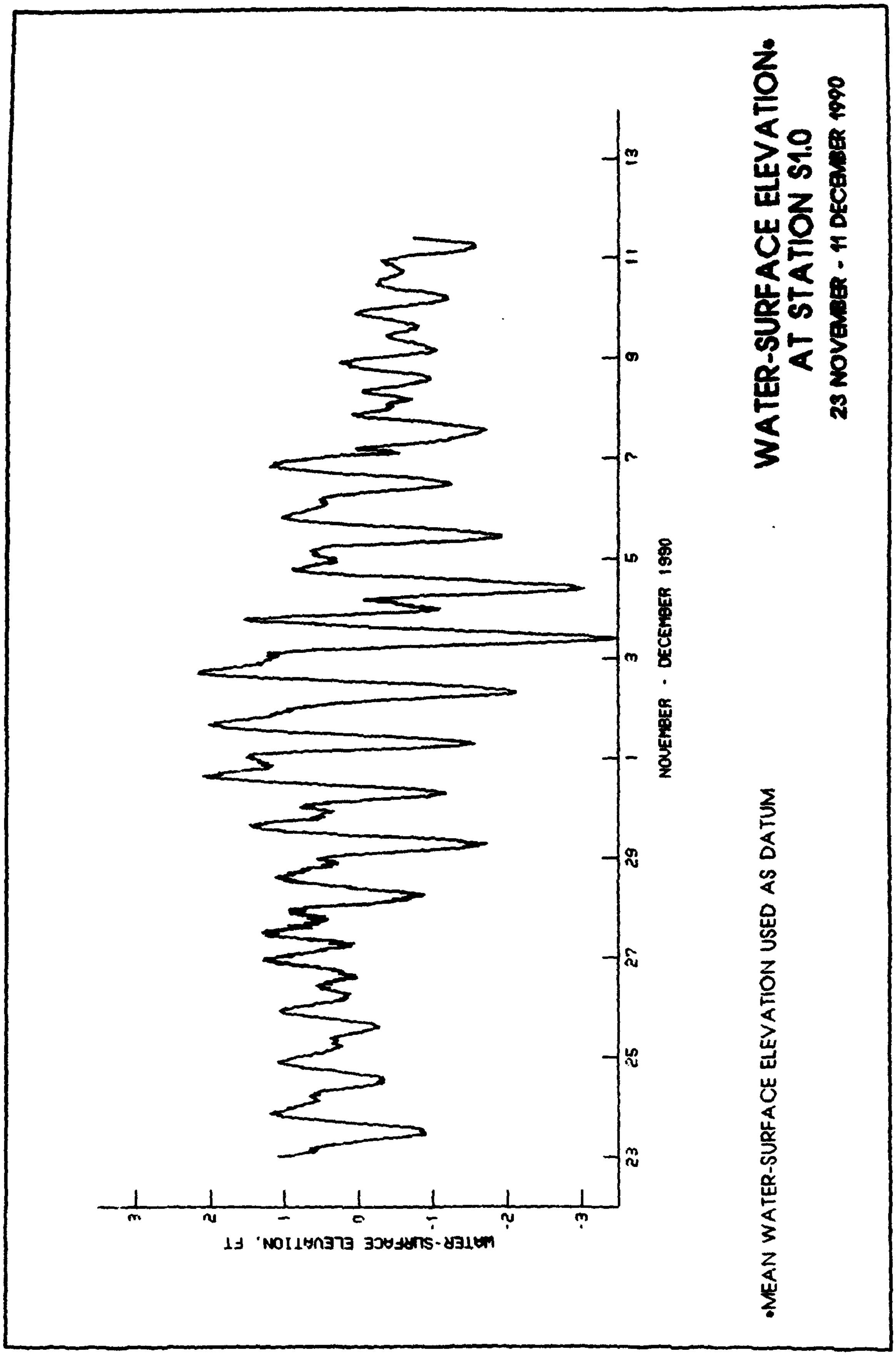
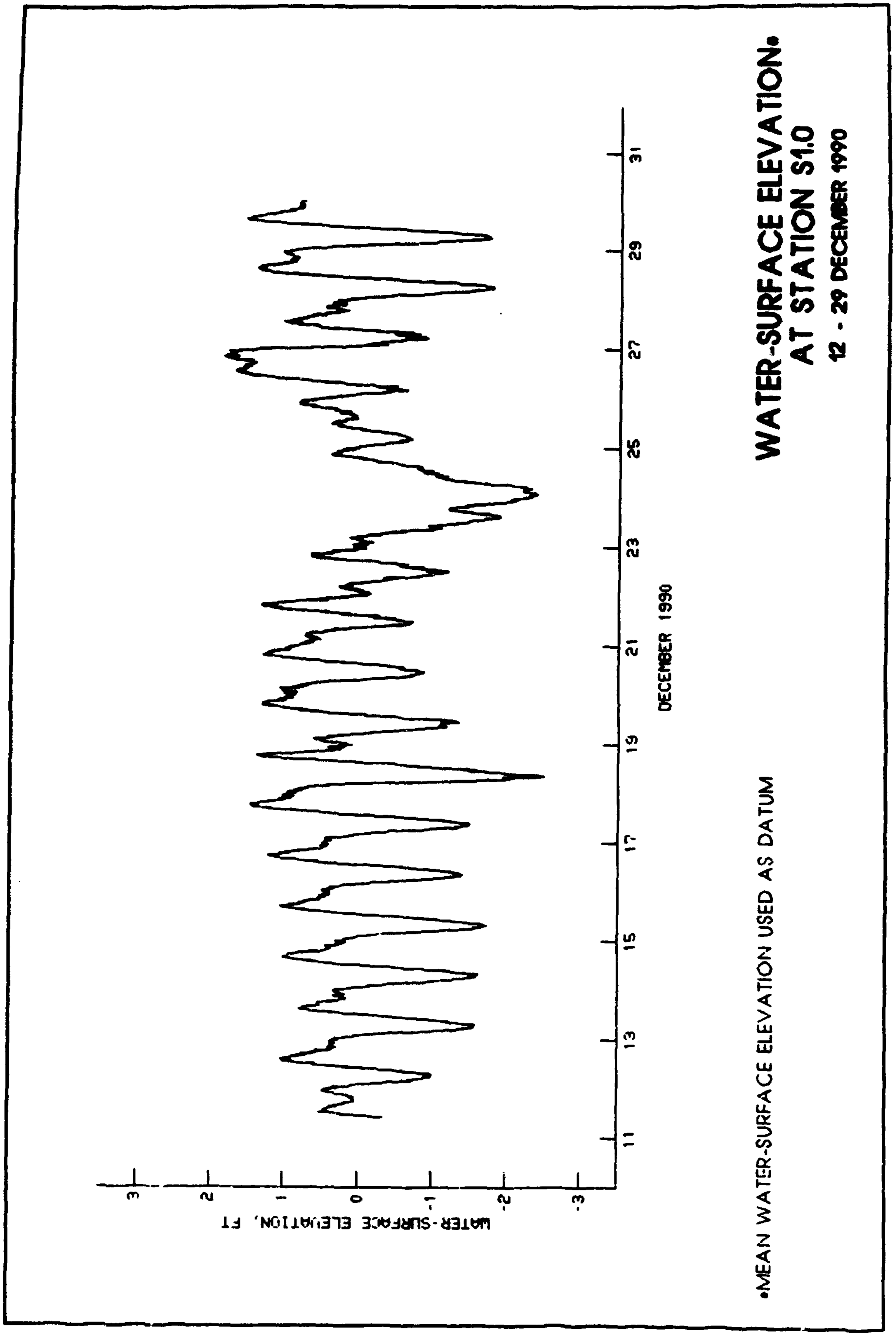
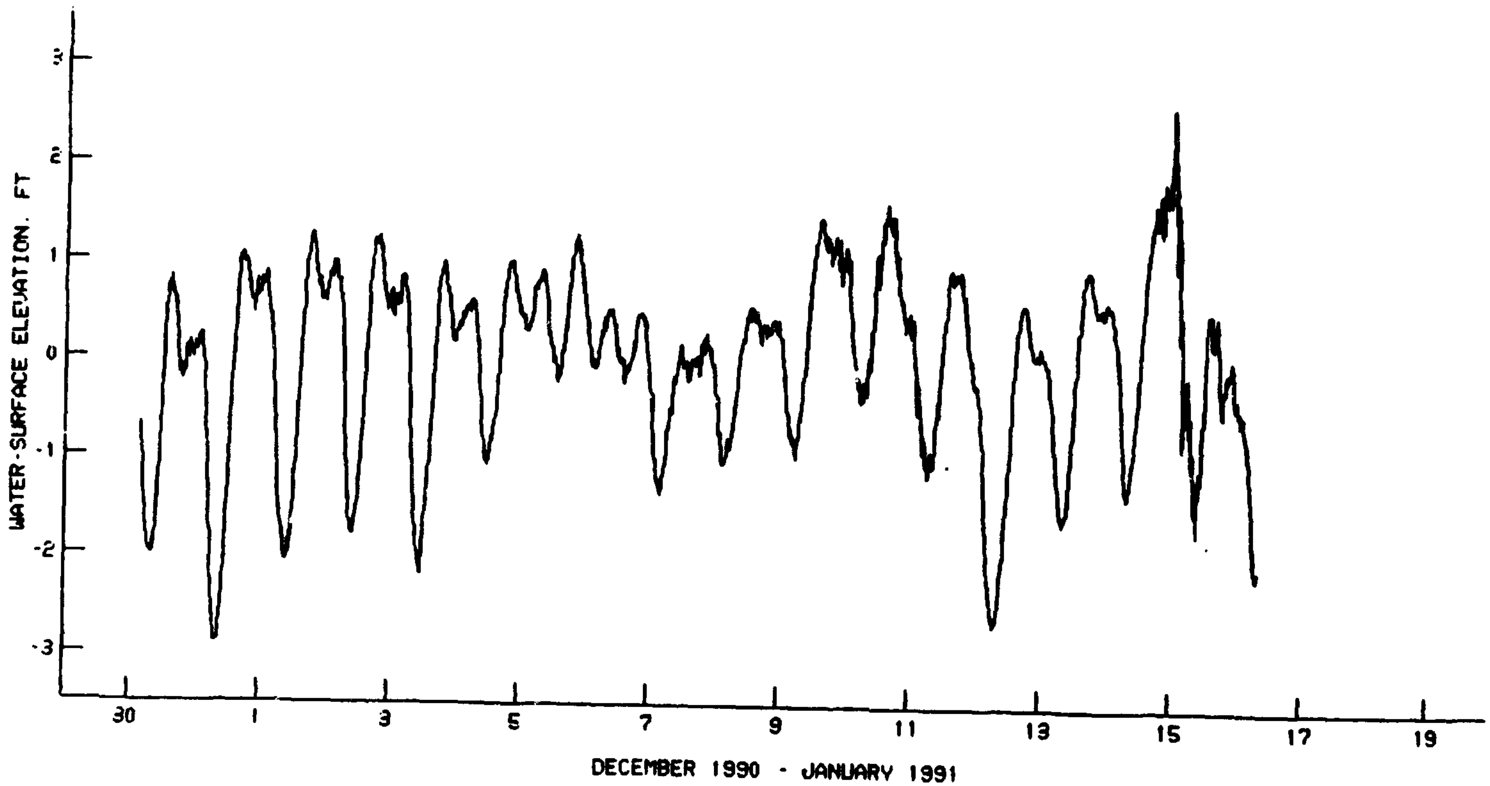

WATER-SURFACE ELEVATION*
AT STATION S1.0
23 NOVEMBER - 11 DECEMBER 1990
WATER-SURFACE ELEVATION, FT
3
2
1
0
-1
-2
-3
23
25
27
29
1
3
5
7
9
11
13
NOVEMBER - DECEMBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

Plate 57



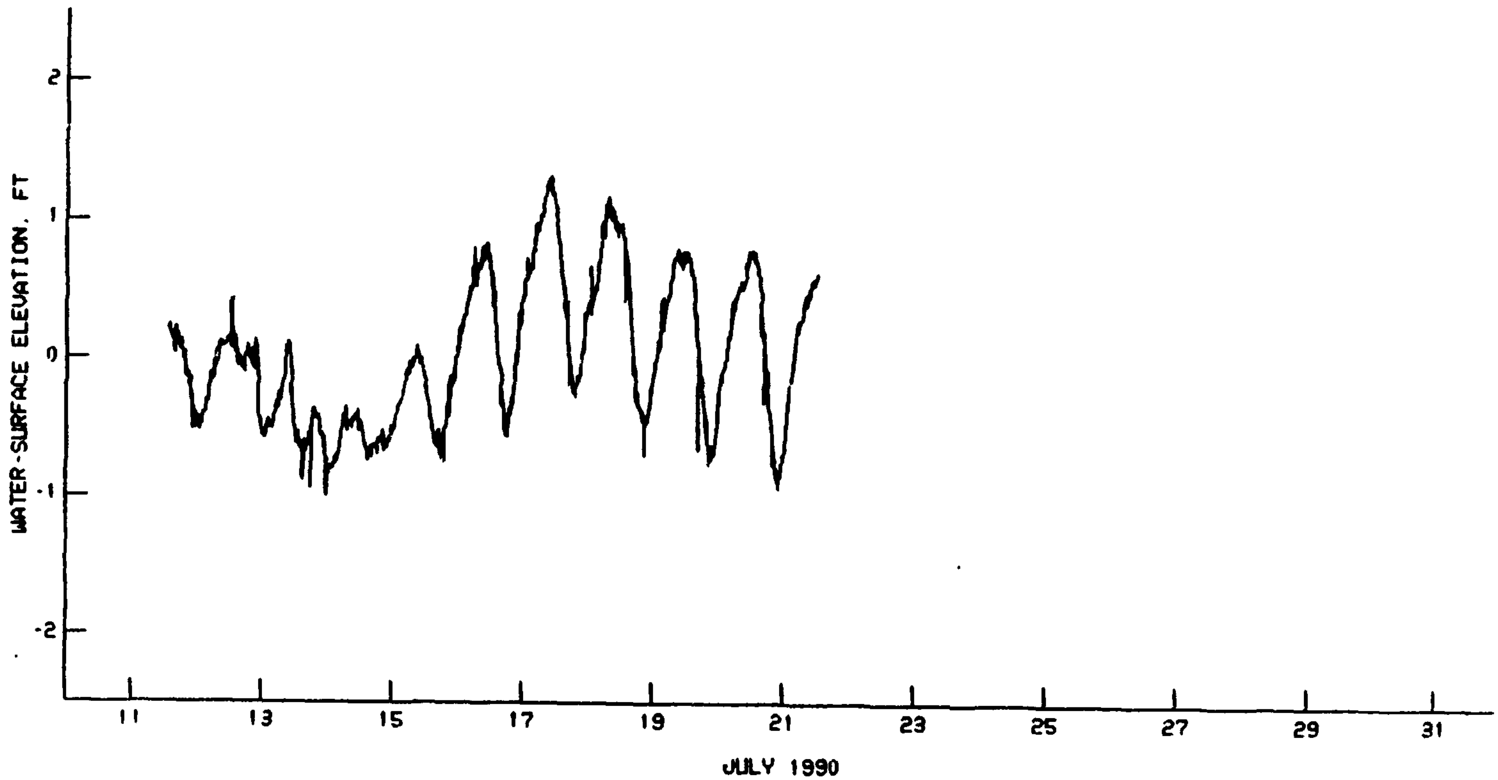
WATER-SURFACE ELEVATION*
AT STATION S1.0
12 - 29 DECEMBER 1990
WATER-SURFACE ELEVATION, FT
3
2
1
0
-1
-2
-3
11
13
15
17
19
21
23
25
27
29
31
DECEMBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

Plate 58



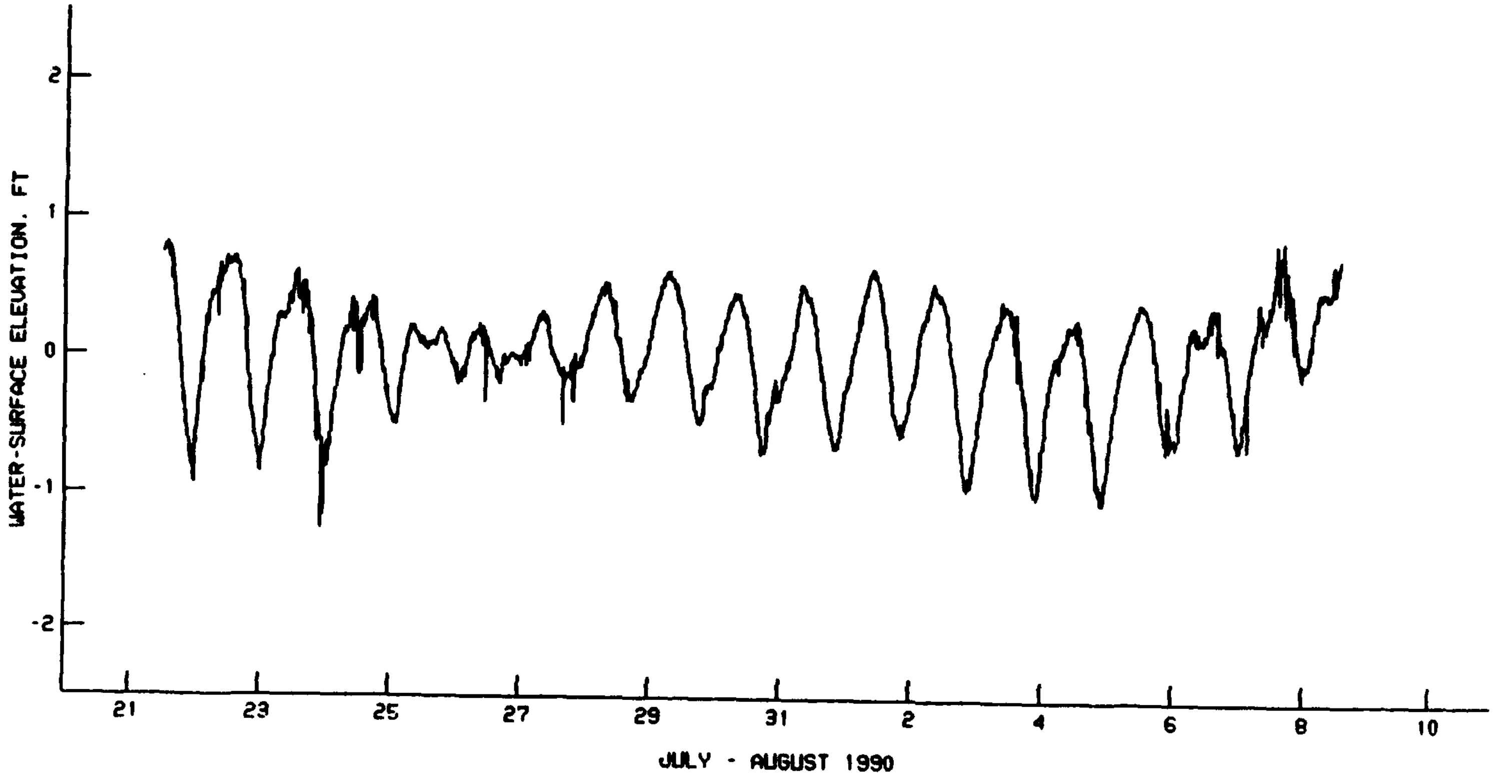
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S1.0
30 DECEMBER 1990 - 16 JANUARY 1991



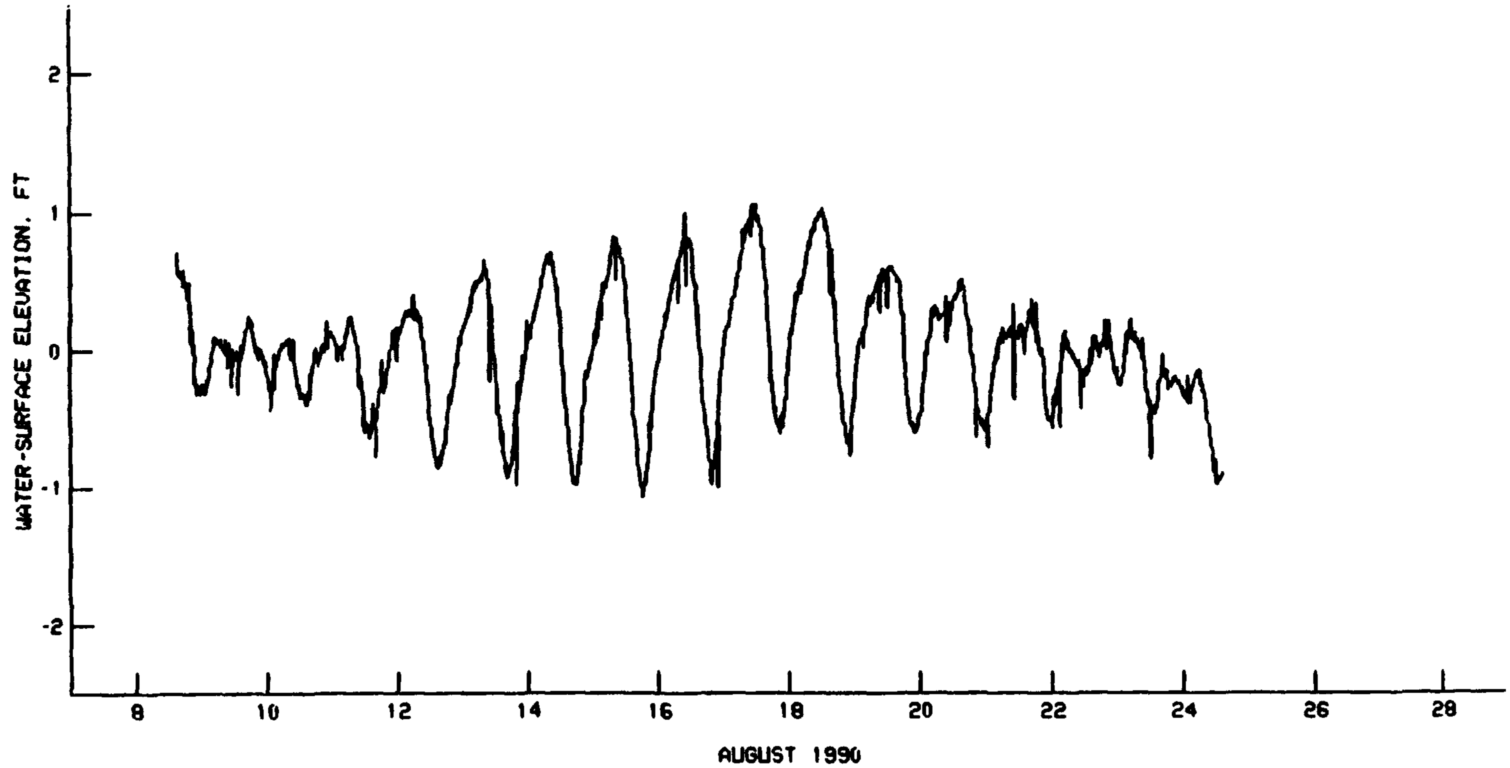
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S3.0
11 - 21 JULY 1990



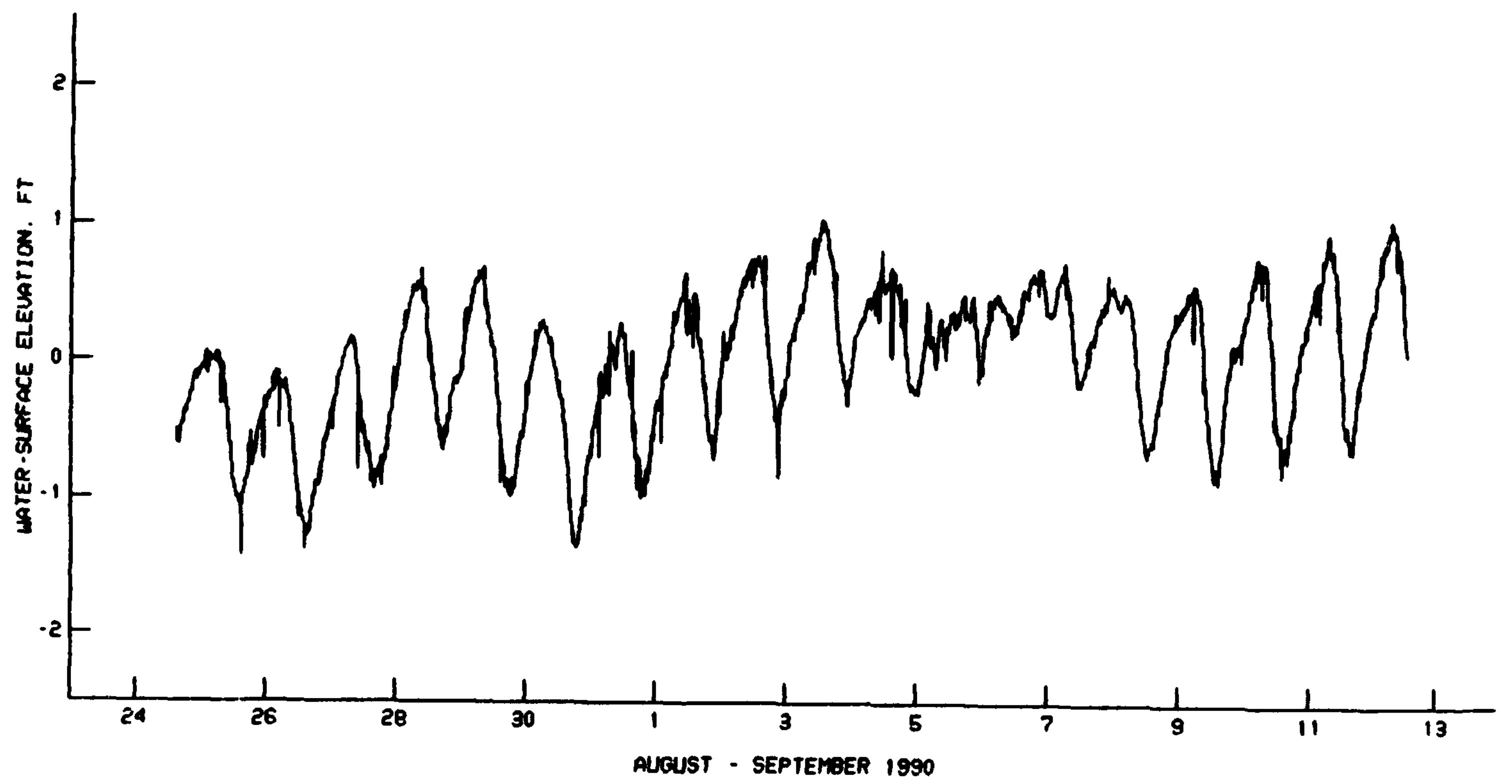
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S3.0
21 JULY - 8 AUGUST 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S3.0
8-24 AUGUST 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S3.0
24 AUGUST-12 SEPTEMBER 1990

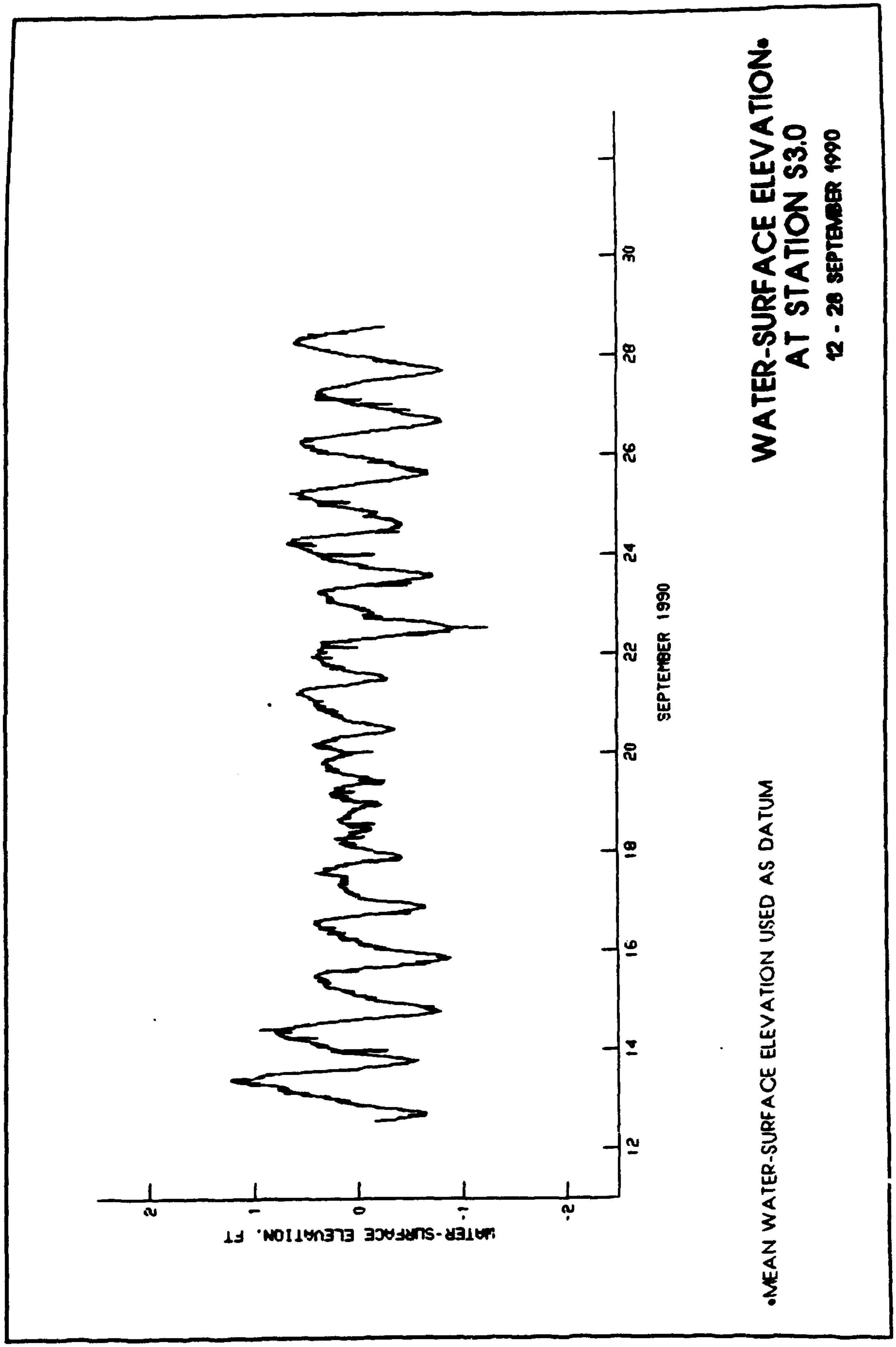
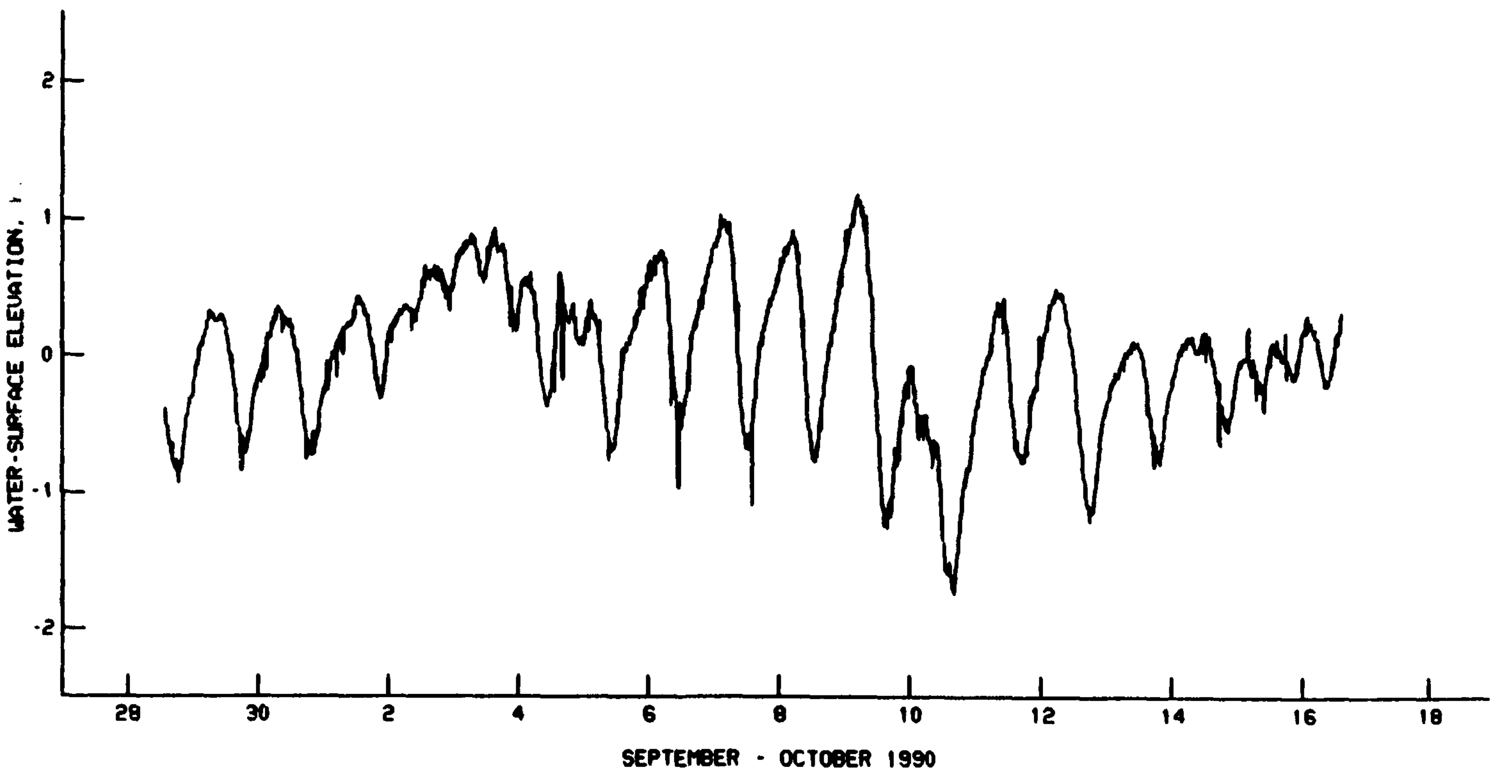

WATER-SURFACE ELEVATION*
AT STATION S3.0
12 - 28 SEPTEMBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM
WATER-SURFACE ELEVATION, FT
SEPTEMBER 1990
2
1
0
-1
-2
12
14
16
18
20
22
24
26
28
30

Plate 64



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S3.0
28 SEPTEMBER - 16 OCTOBER 1990

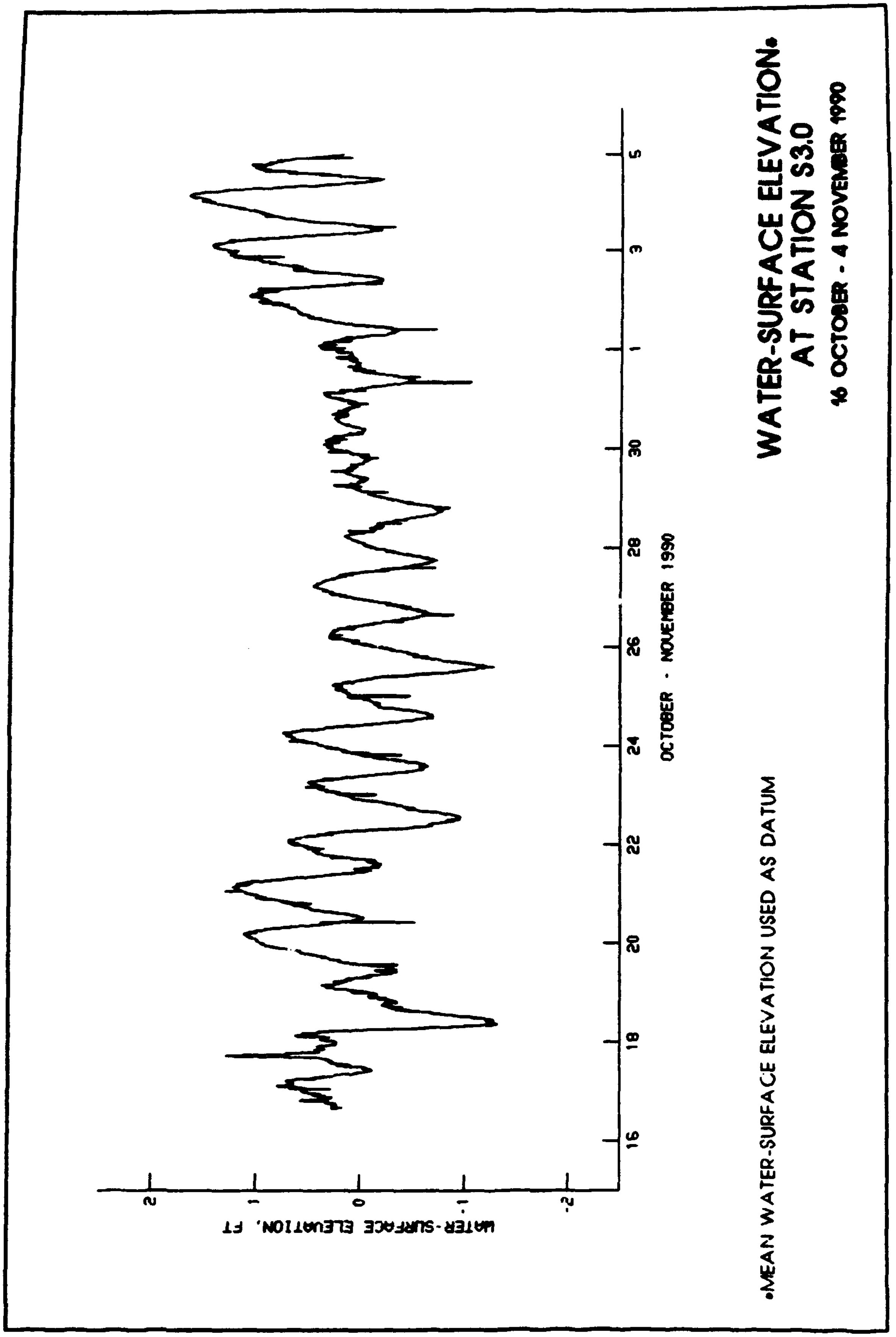
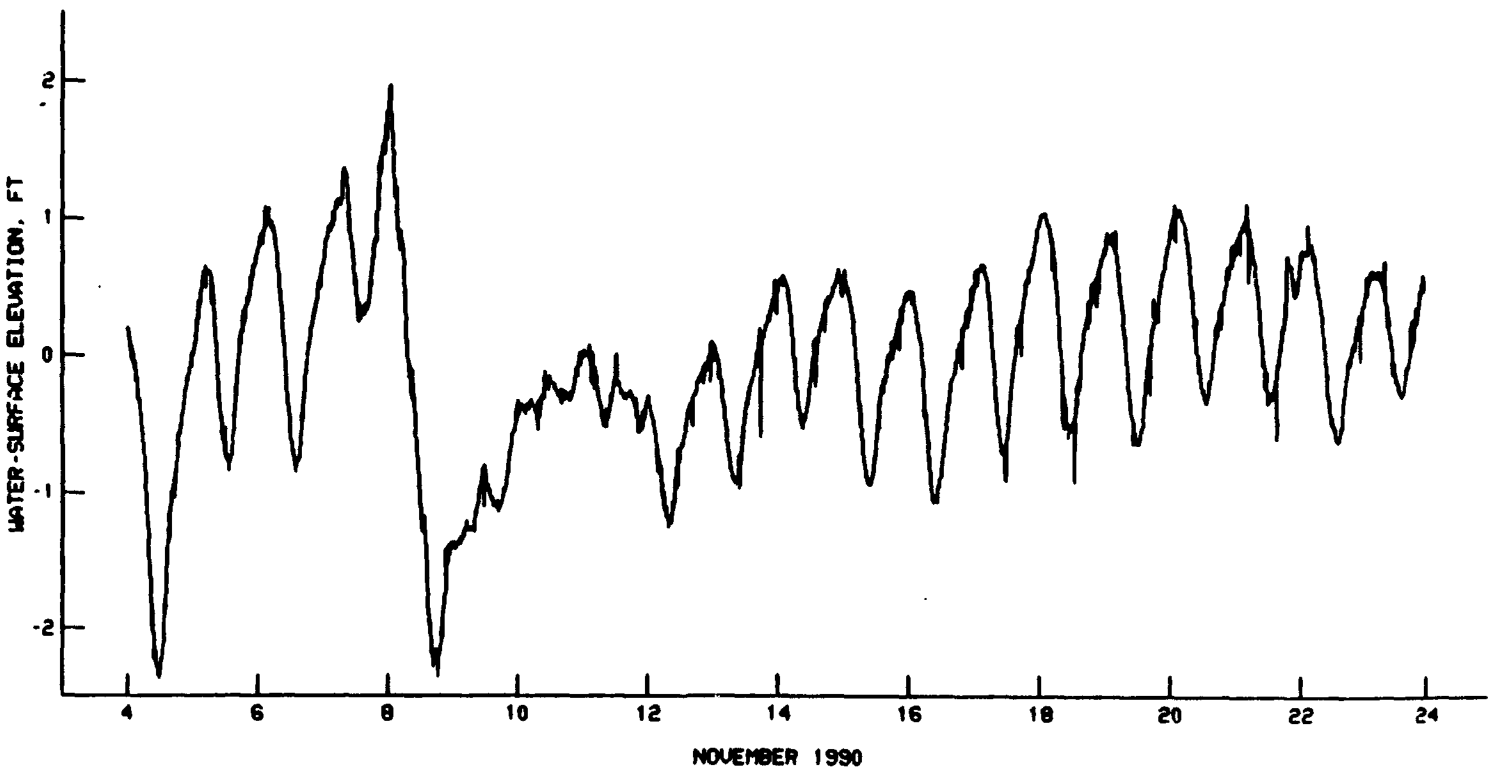
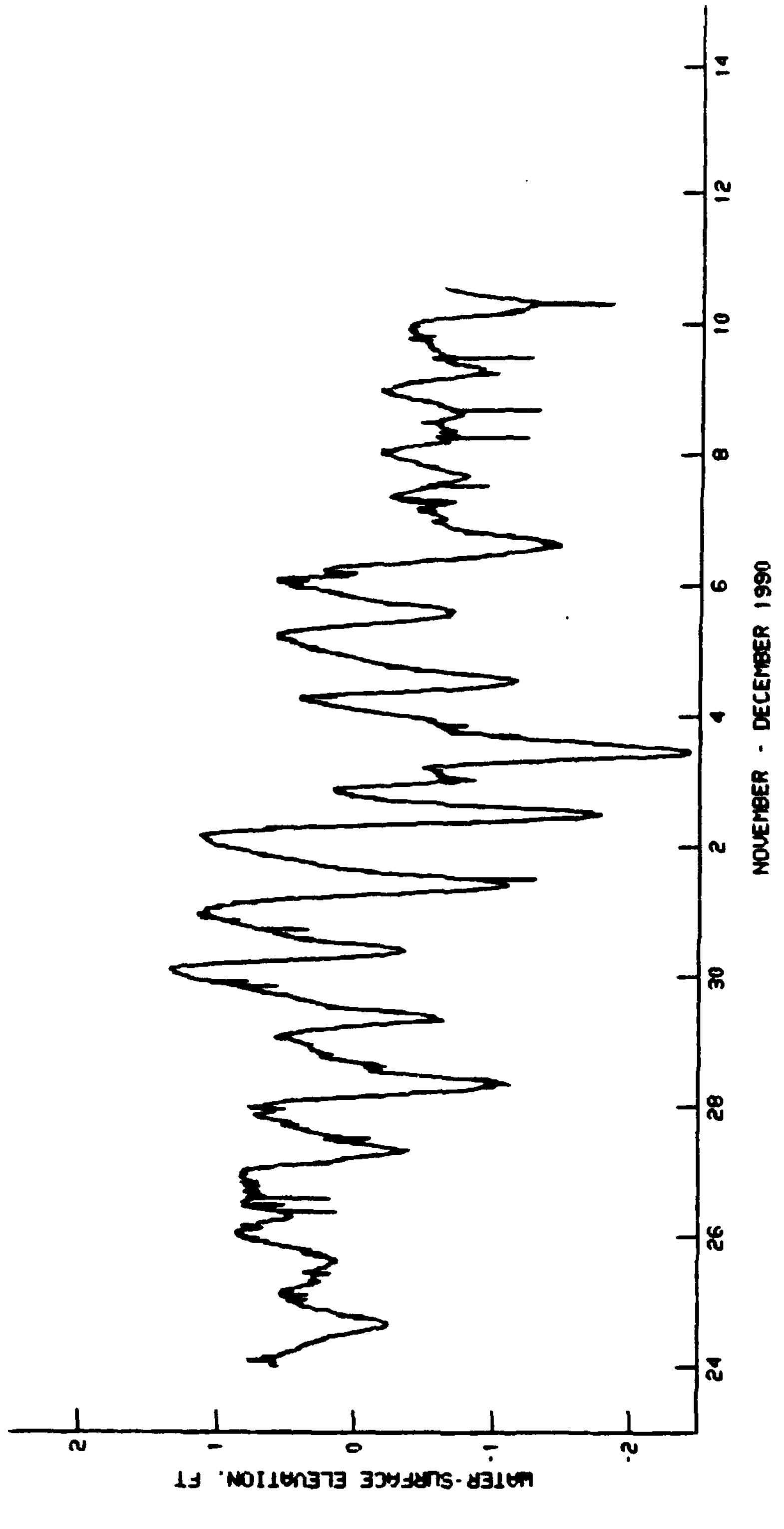

WATER-SURFACE ELEVATION*
AT STATION S3.0
16 OCTOBER - 4 NOVEMBER 1990
WATER-SURFACE ELEVATION, FT
2
1
0
-1
-2
16
18
20
22
24
26
28
30
1
3
5
OCTOBER - NOVEMBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

Plate 66



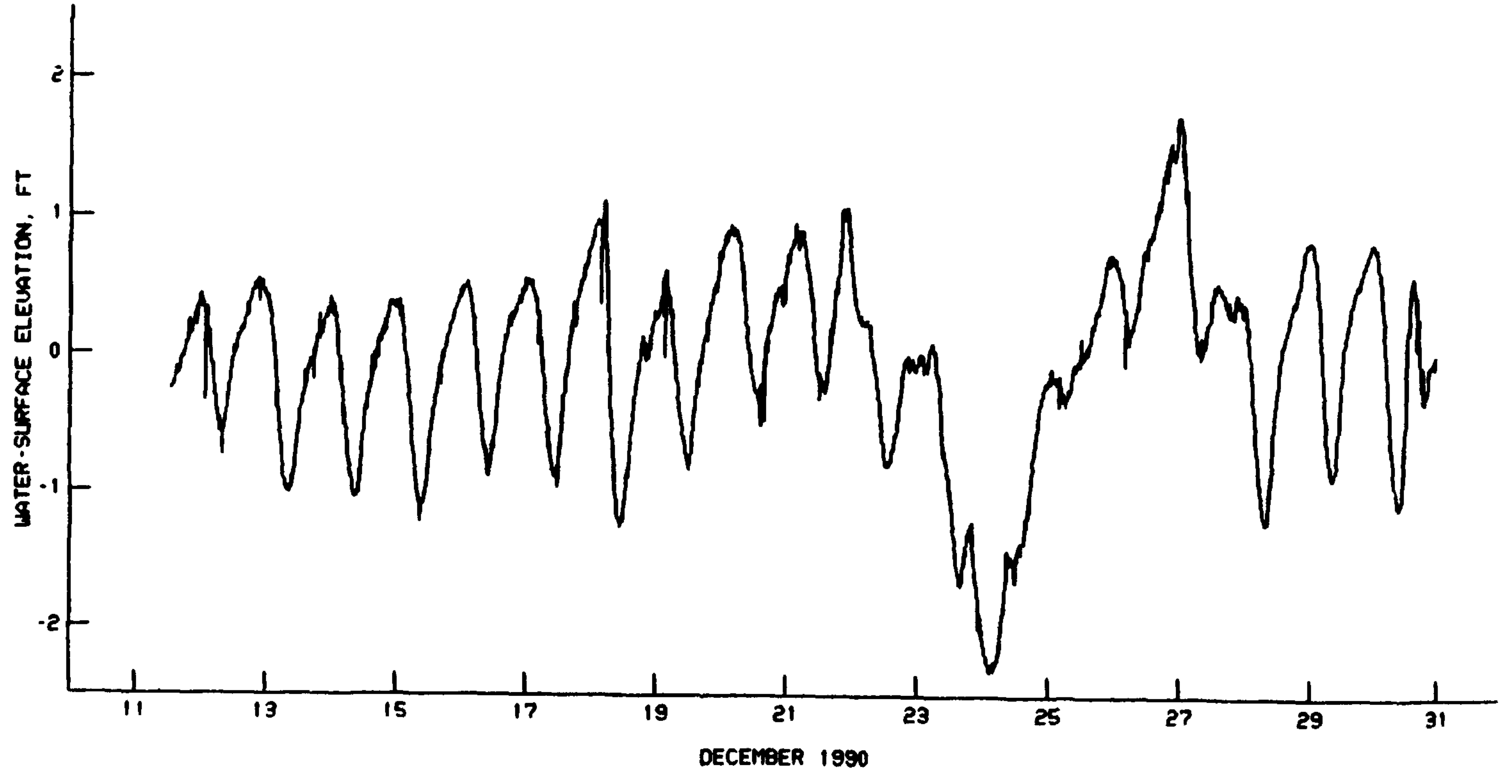
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S3.0
4 - 24 NOVEMBER 1990



WATER-SURFACE ELEVATION*
AT STATION S3.0
24 NOVEMBER - 11 DECEMBER 1990

*MEAN WATER-SURFACE ELEVATION USED AS DATUM



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S3.0
11 - 31 DECEMBER 1990

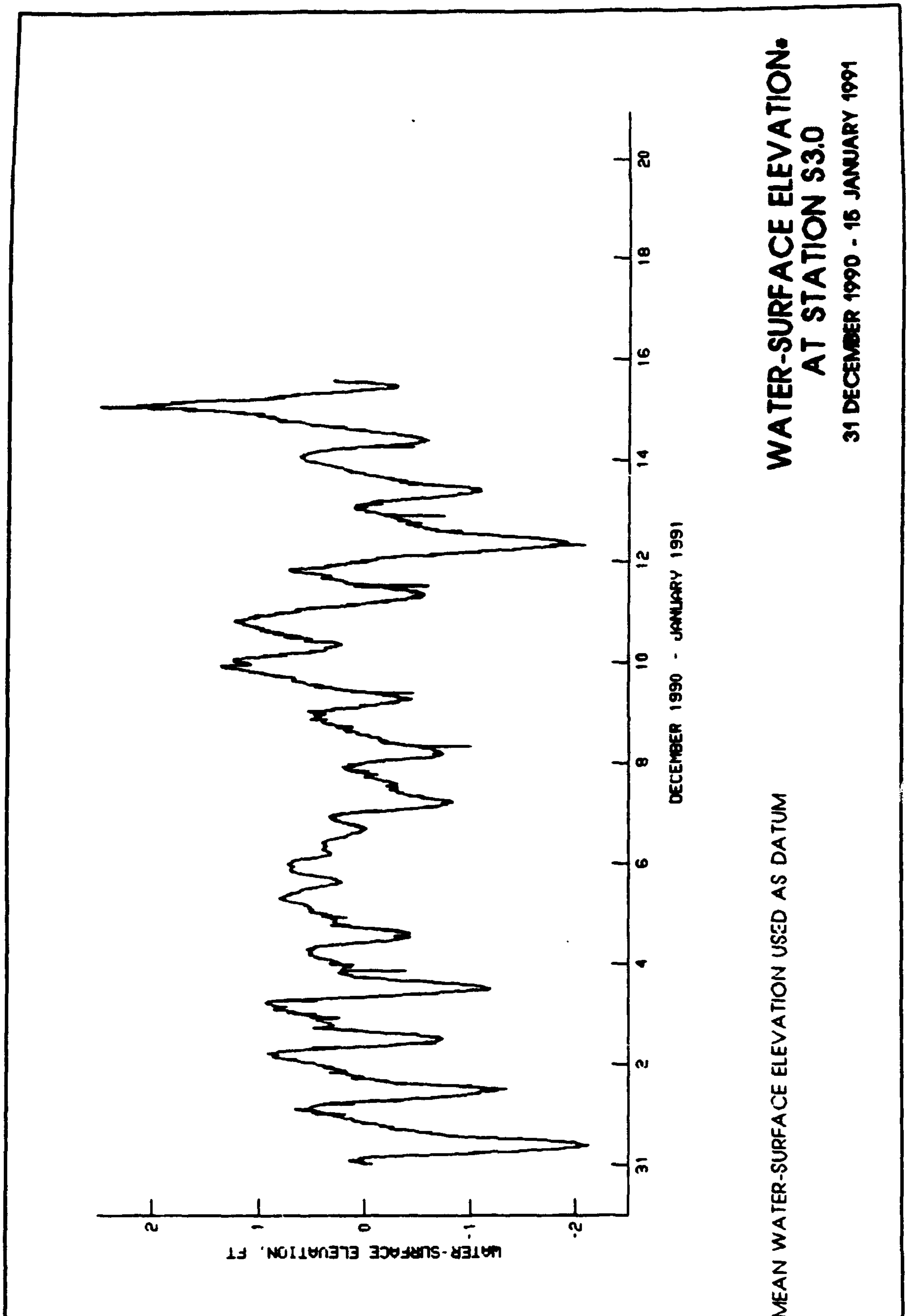
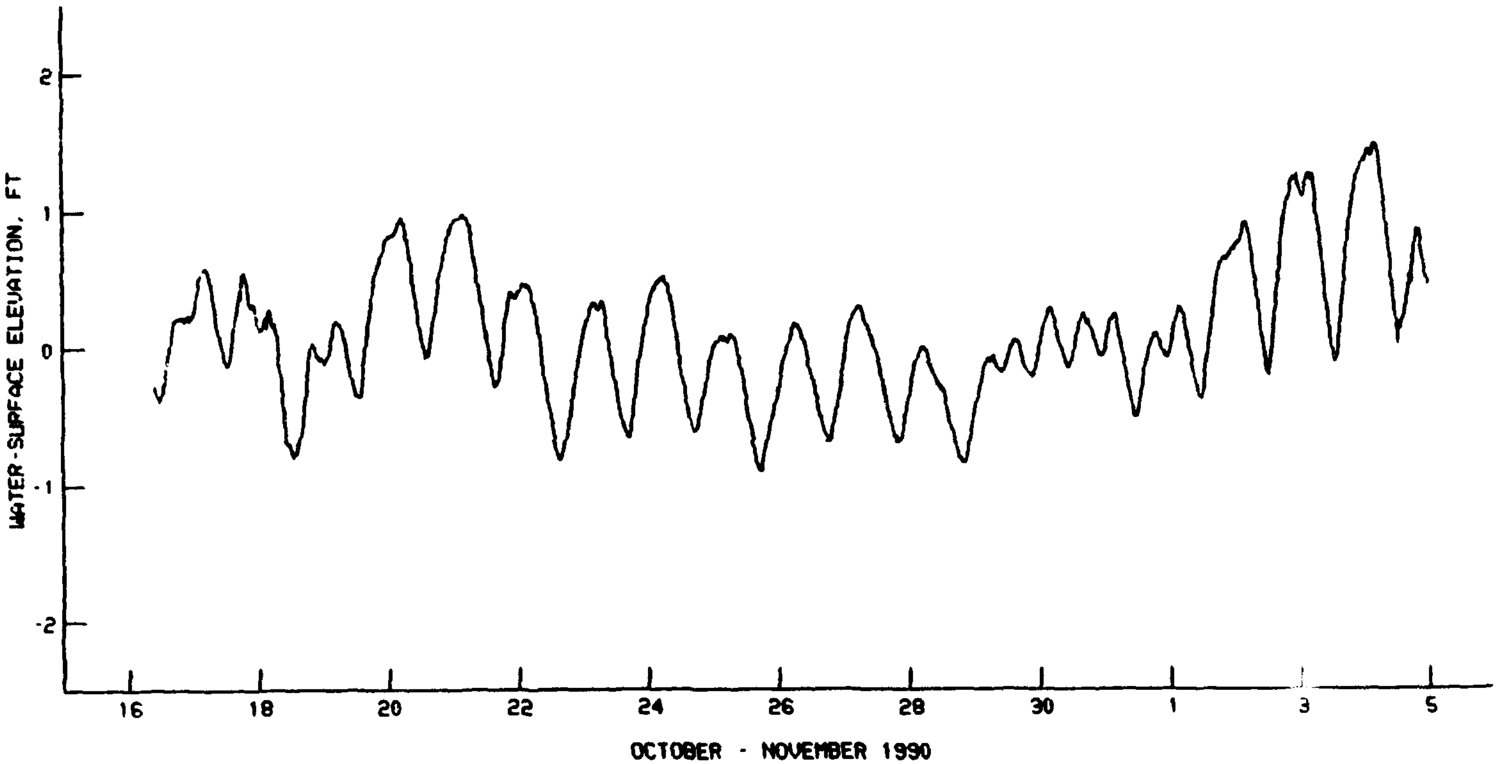
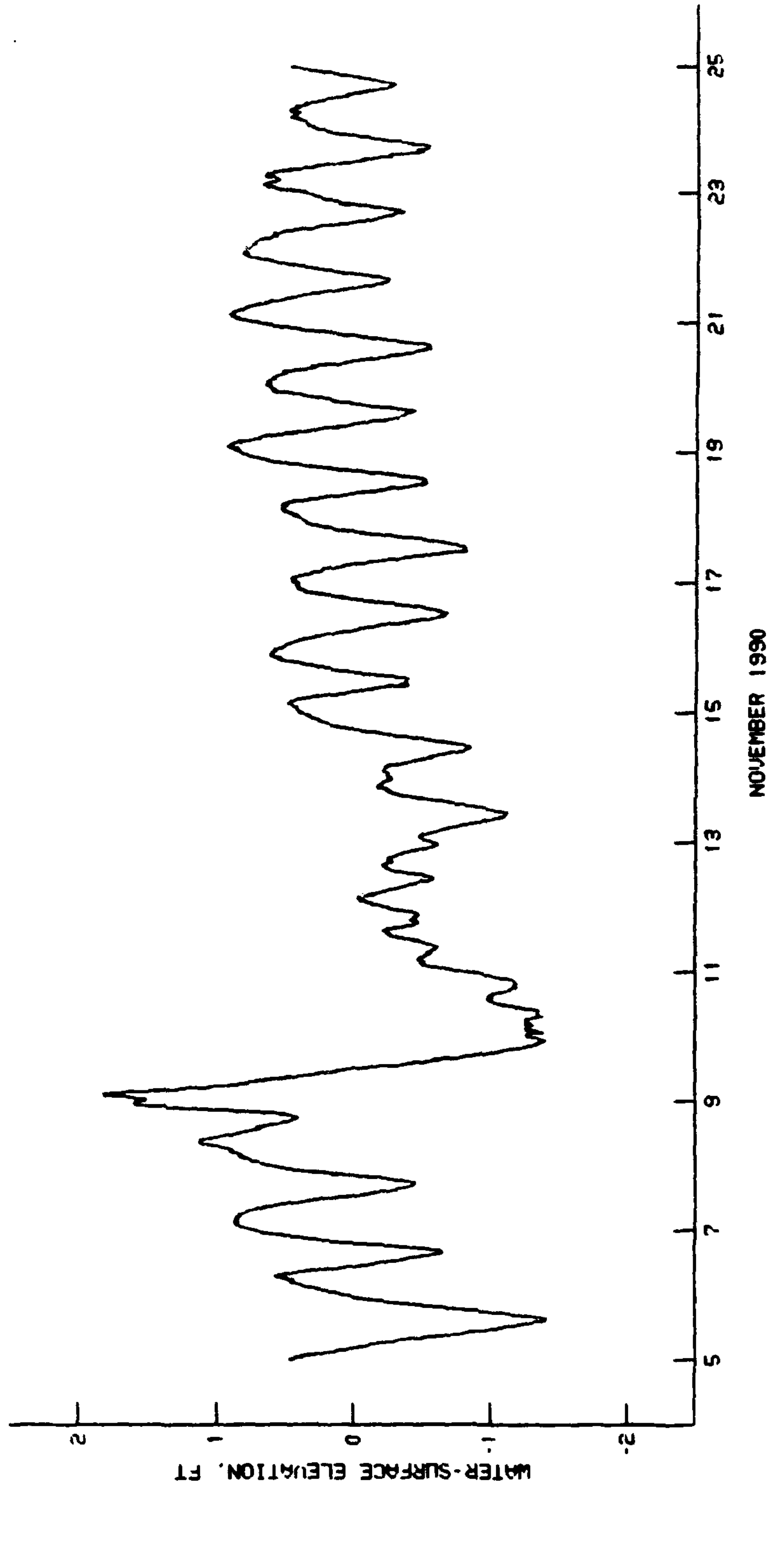

WATER-SURFACE ELEVATION*
AT STATION S3.0
31 DECEMBER 1990 - 15 JANUARY 1991
WATER-SURFACE ELEVATION, FT
2
1
0
-1
-2
31
2
4
6
8
10
12
14
16
18
20
DECEMBER 1990 - JANUARY 1991
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

Plate 70



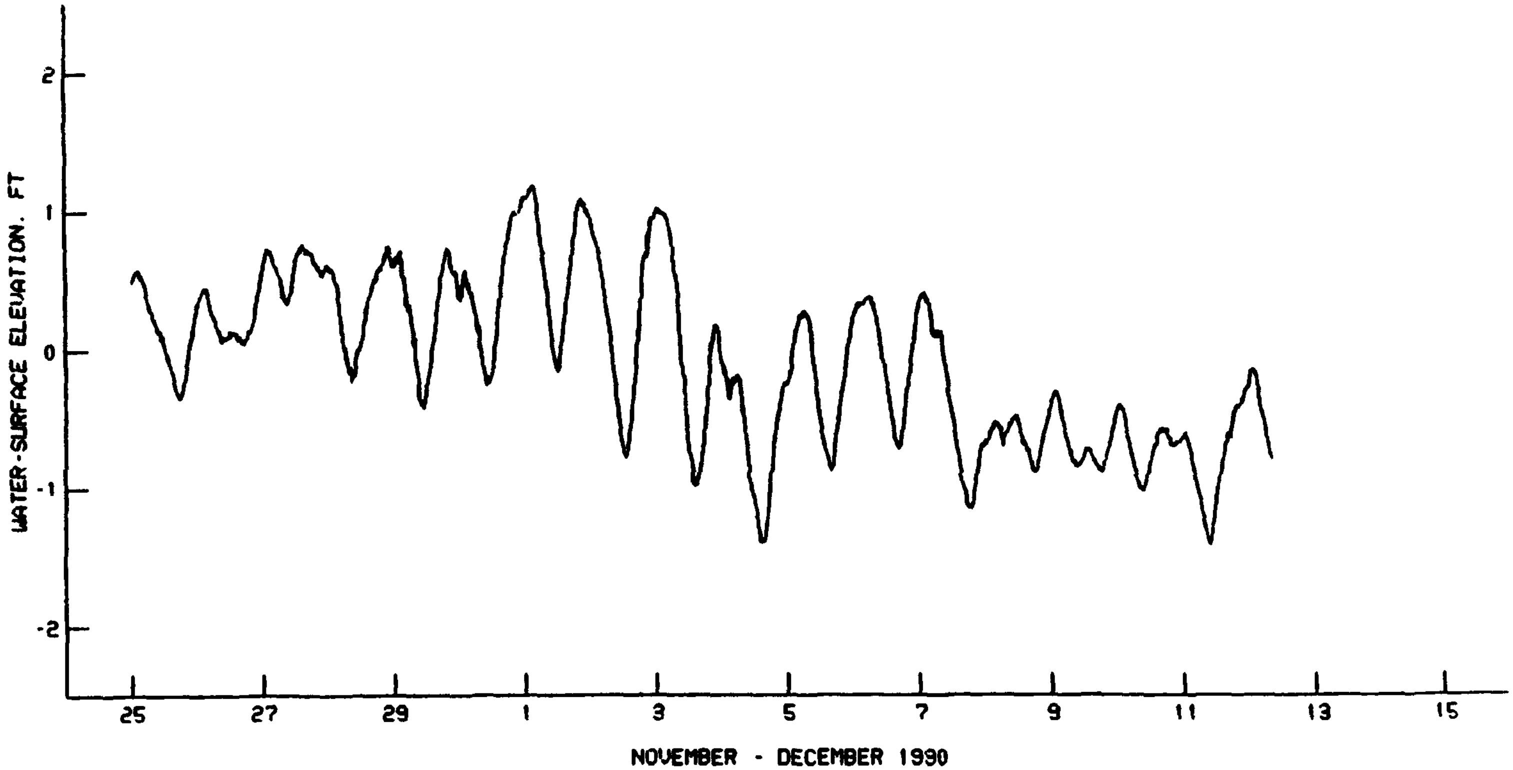
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S5.0
16 OCTOBER - 5 NOVEMBER 1990



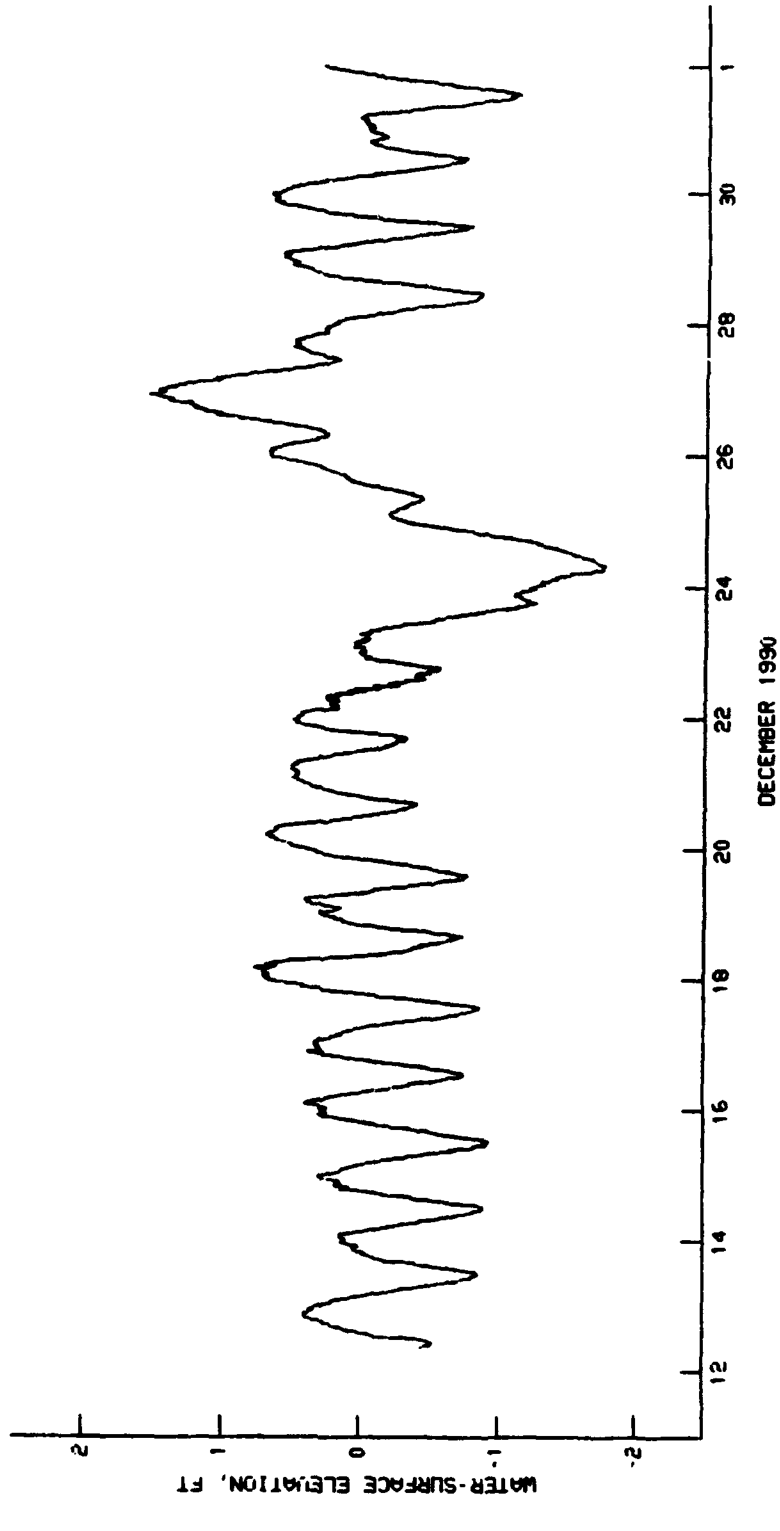
WATER-SURFACE ELEVATION*
AT STATION S5.0
5 - 25 NOVEMBER 1990

*MEAN WATER-SURFACE ELEVATION USED AS DATUM



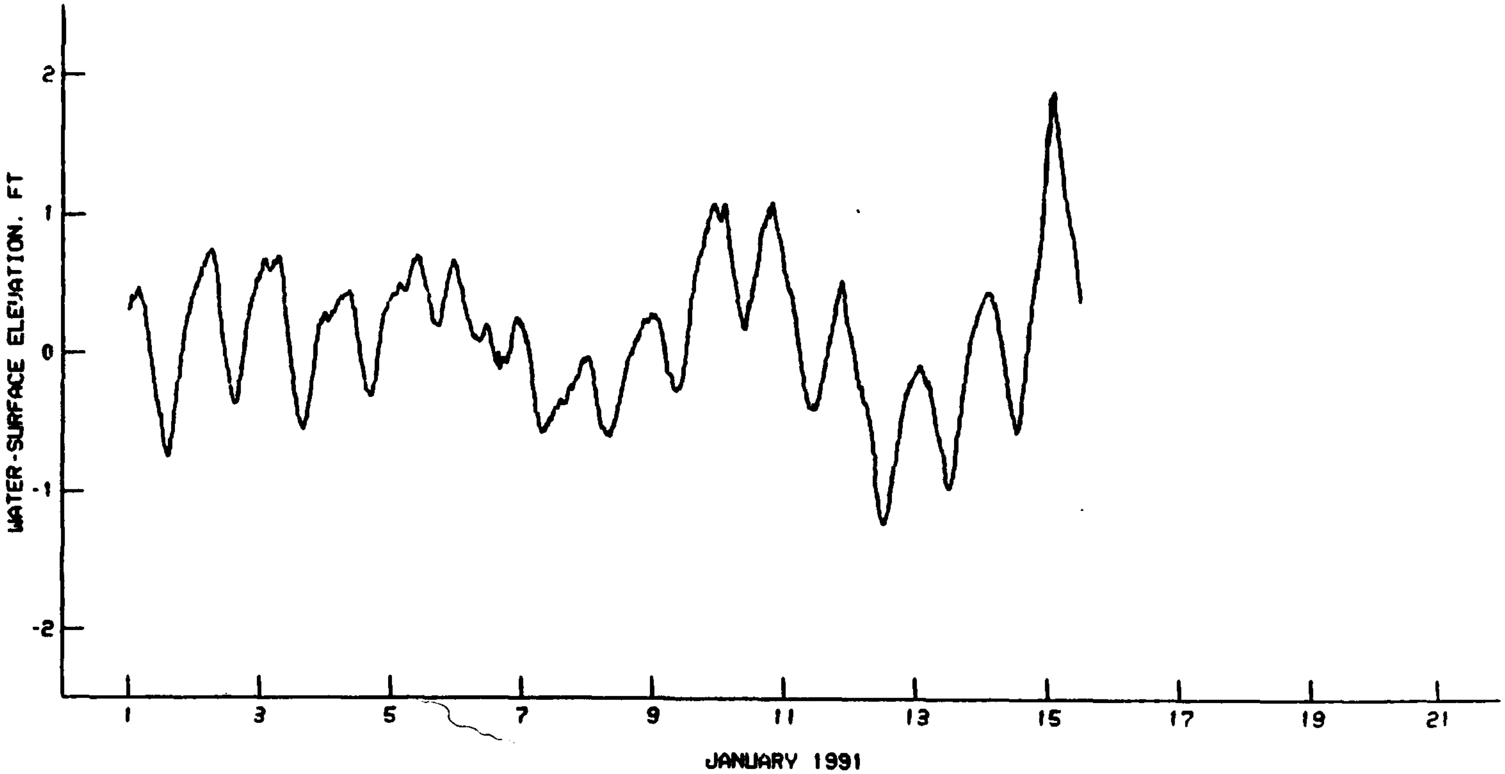
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S5.0
25 NOVEMBER - 12 DECEMBER 1990



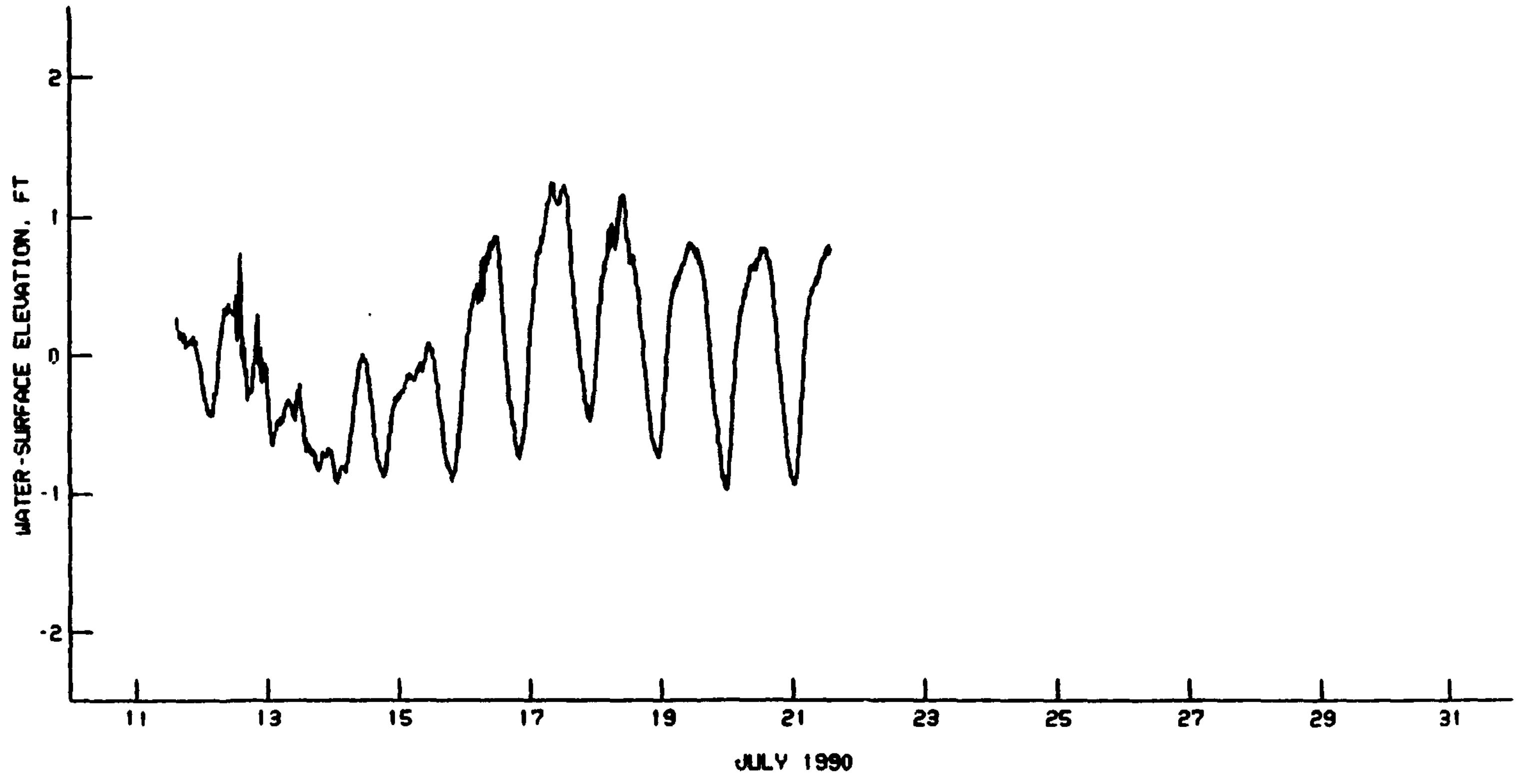
WATER-SURFACE ELEVATION•
AT STATION S5.0
12 - 31 DECEMBER 1990

•MEAN WATER-SURFACE ELEVATION USED AS DATUM



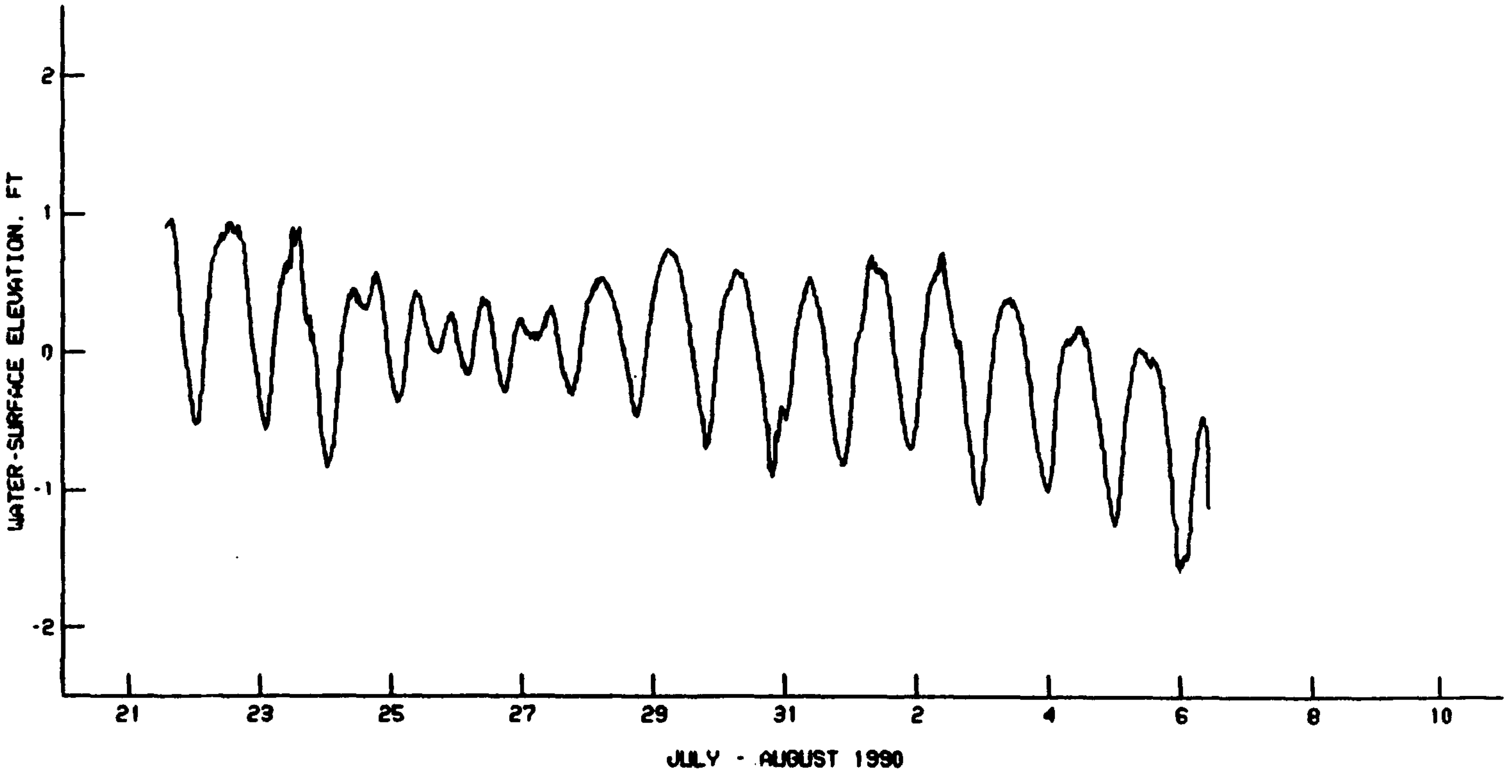
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S5.0
1 - 15 JANUARY 1991



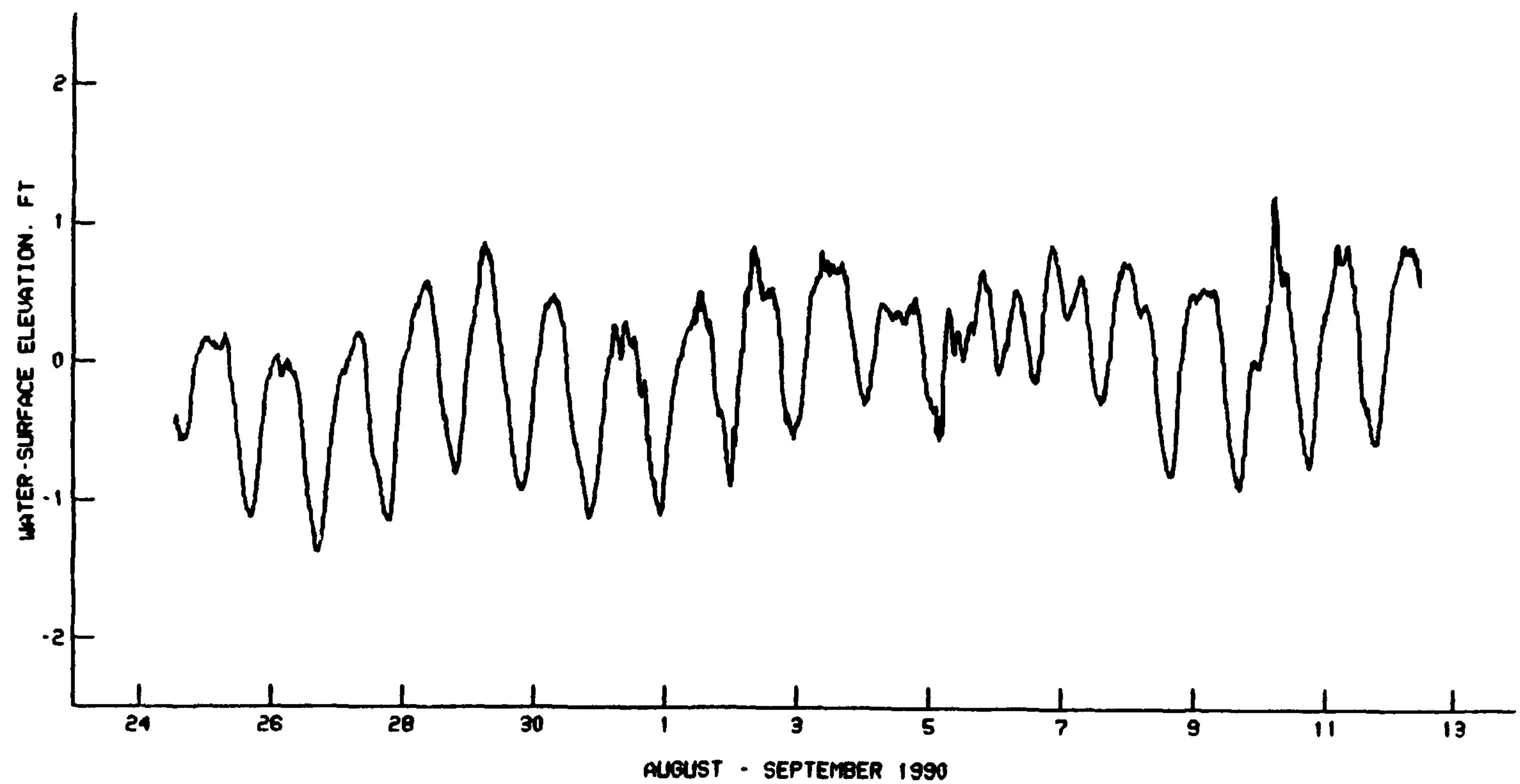
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S7.0
11 - 21 JULY 1990



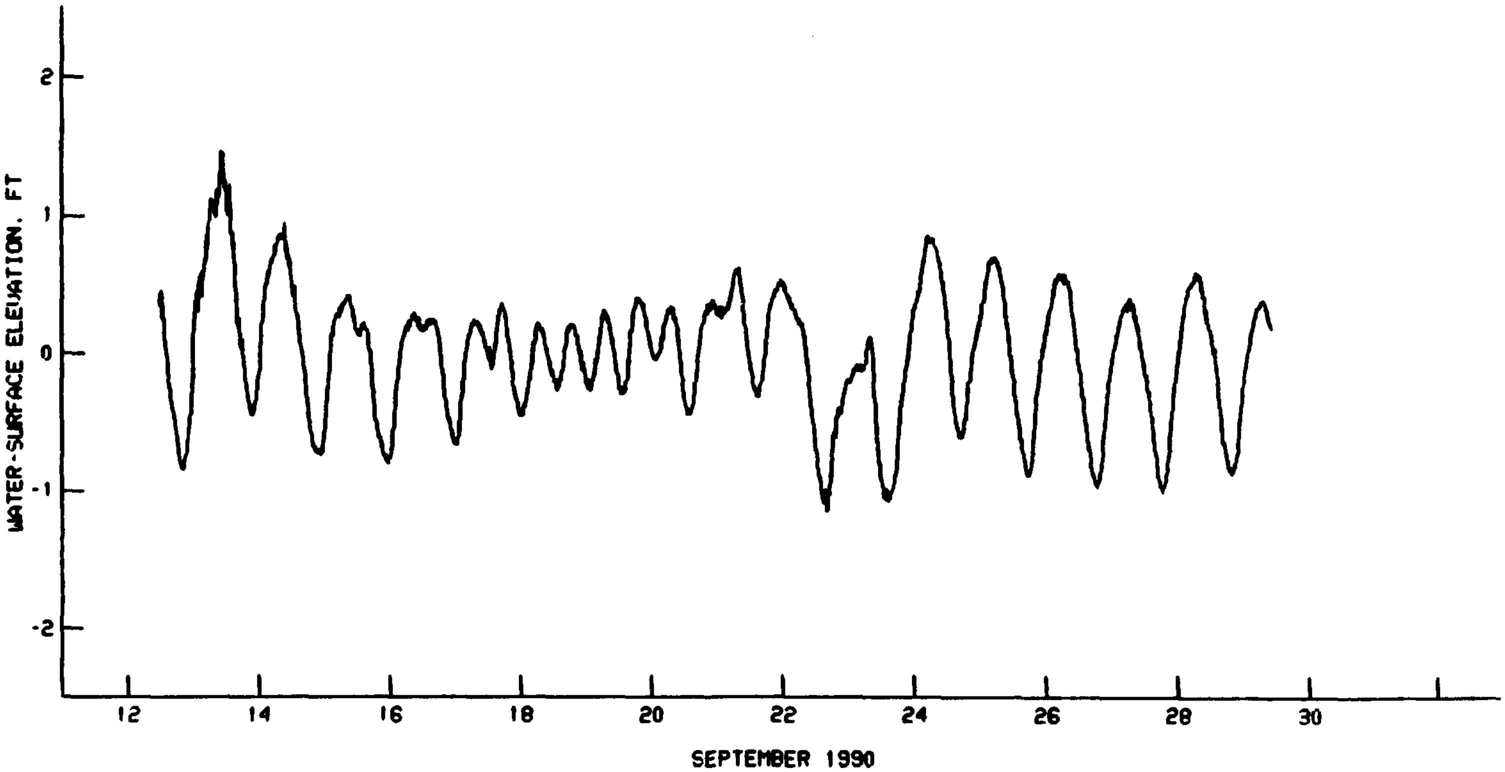
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S7.0
21 JULY - 8 AUGUST 1990



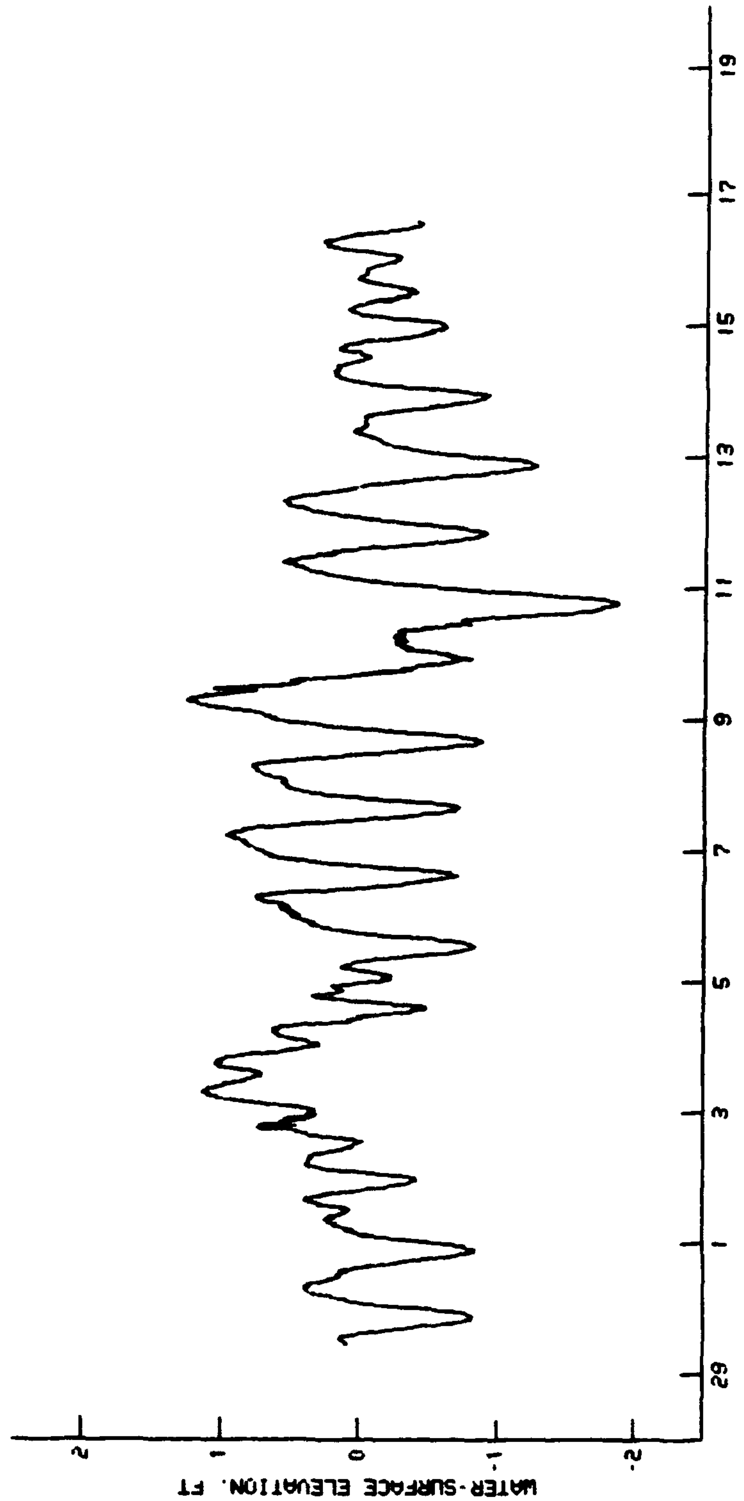
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S7.0
24 AUGUST - 12 SEPTEMBER 1990



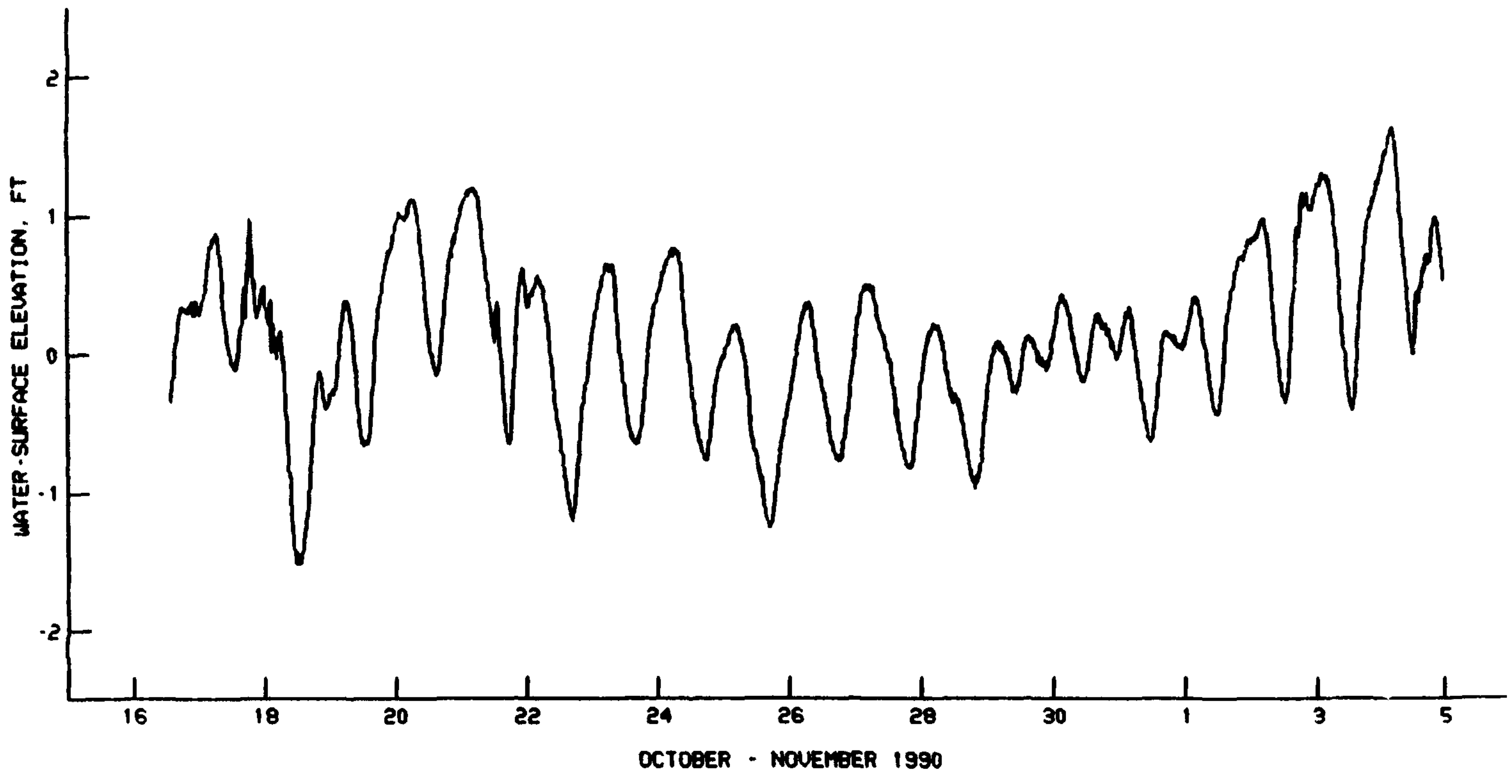
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S7.0
12 - 29 SEPTEMBER 1990



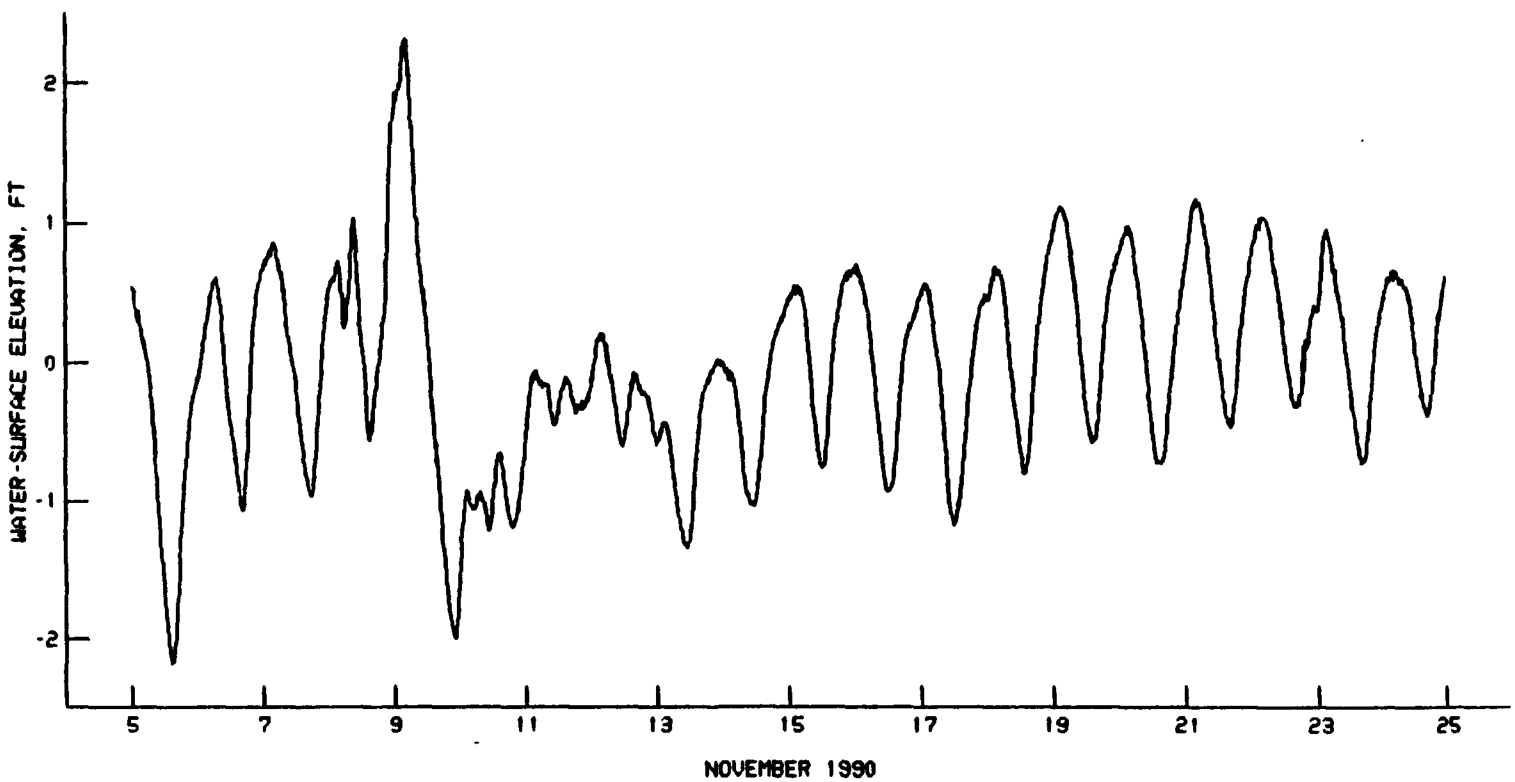
WATER-SURFACE ELEVATION*
AT STATION S7.0
29 SEPTEMBER - 16 OCTOBER 1990

*MEAN WATER-SURFACE ELEVATION USED AS DATUM



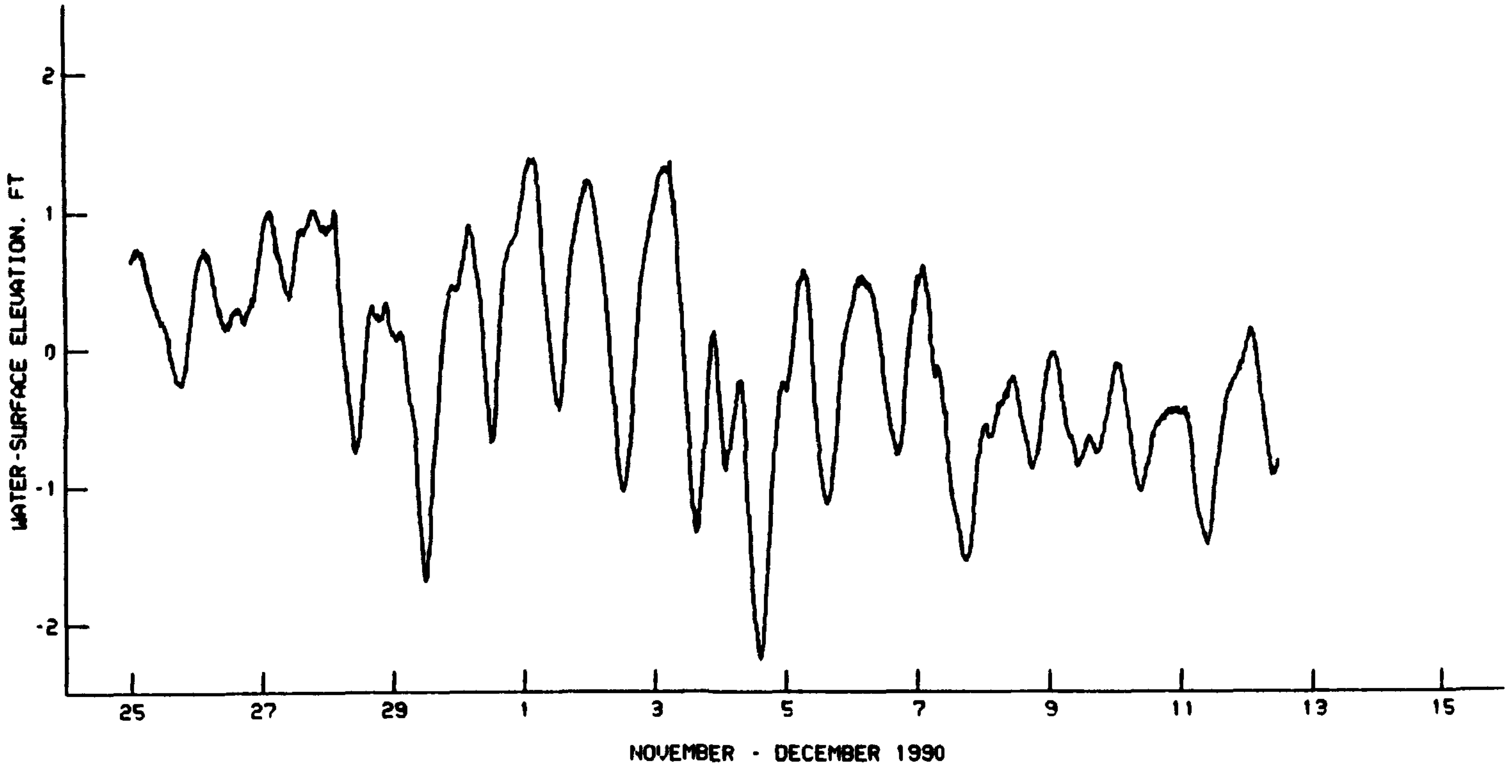
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S7.0
16 OCTOBER - 5 NOVEMBER 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

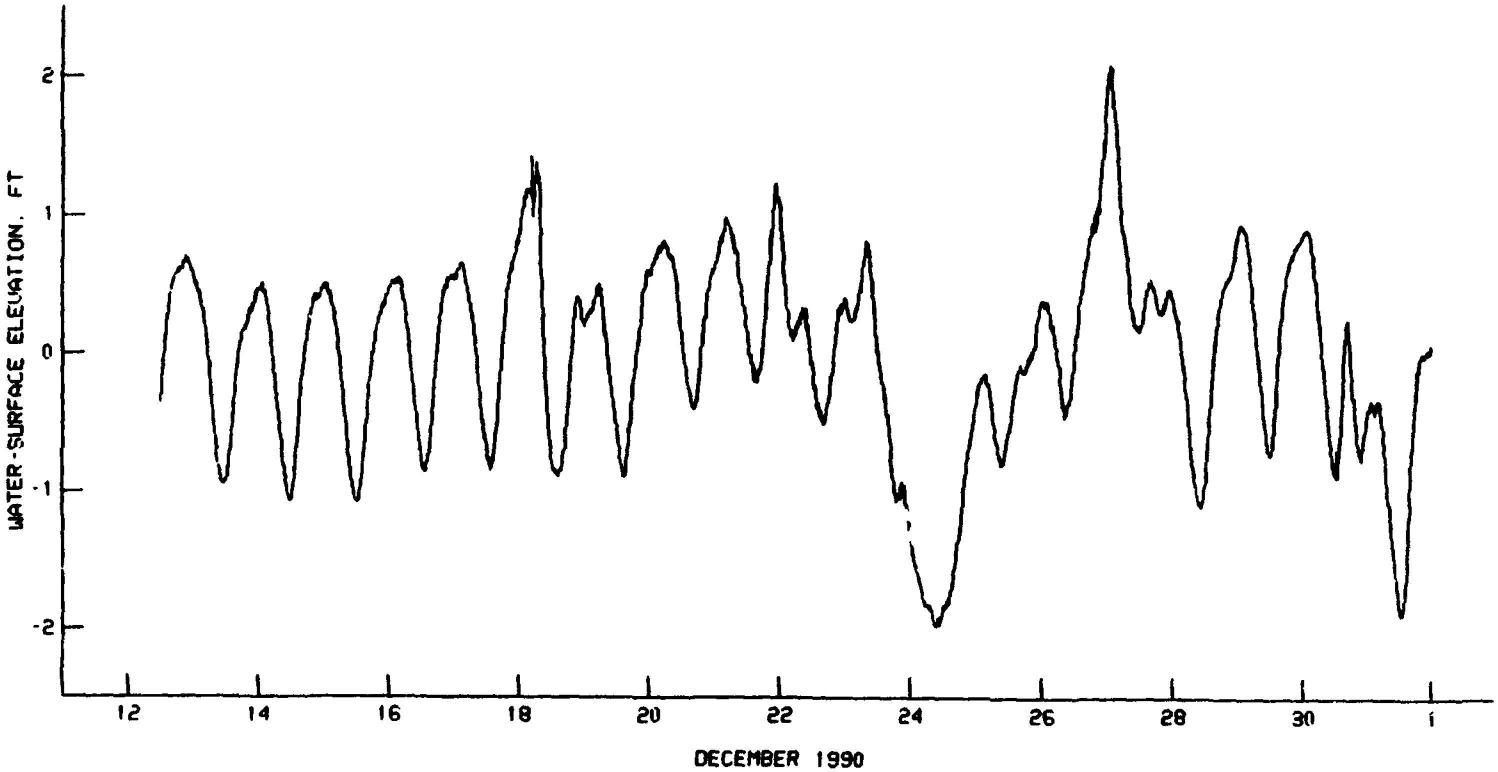
WATER-SURFACE ELEVATION•
AT STATION S7.0
5 - 26 NOVEMBER 1990



*MEAN WATER-SURFACE ELEVATION USED AS DATUM

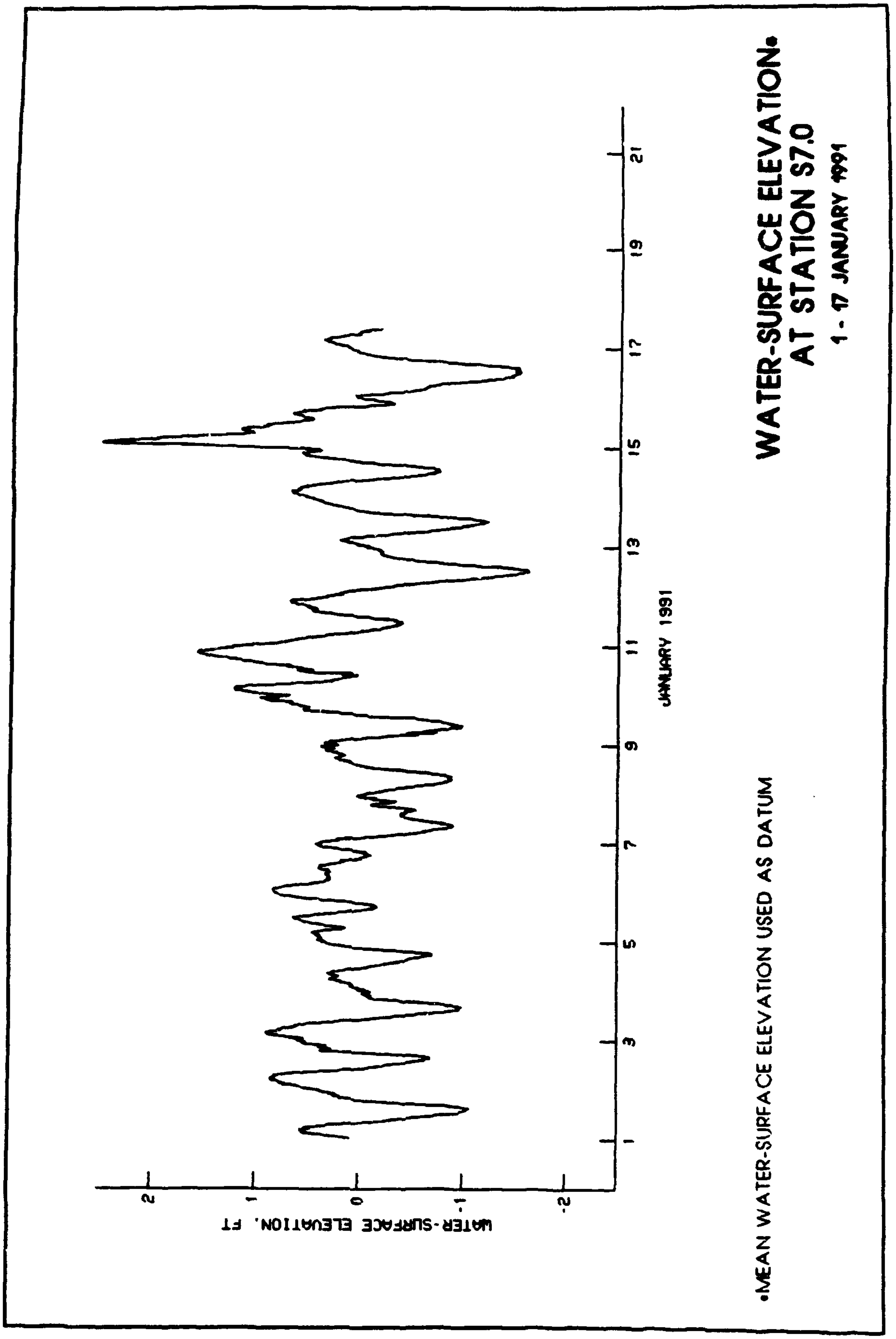
**WATER-SURFACE ELEVATION*
AT STATION S7.0**

25 NOVEMBER - 12 DECEMBER 1990

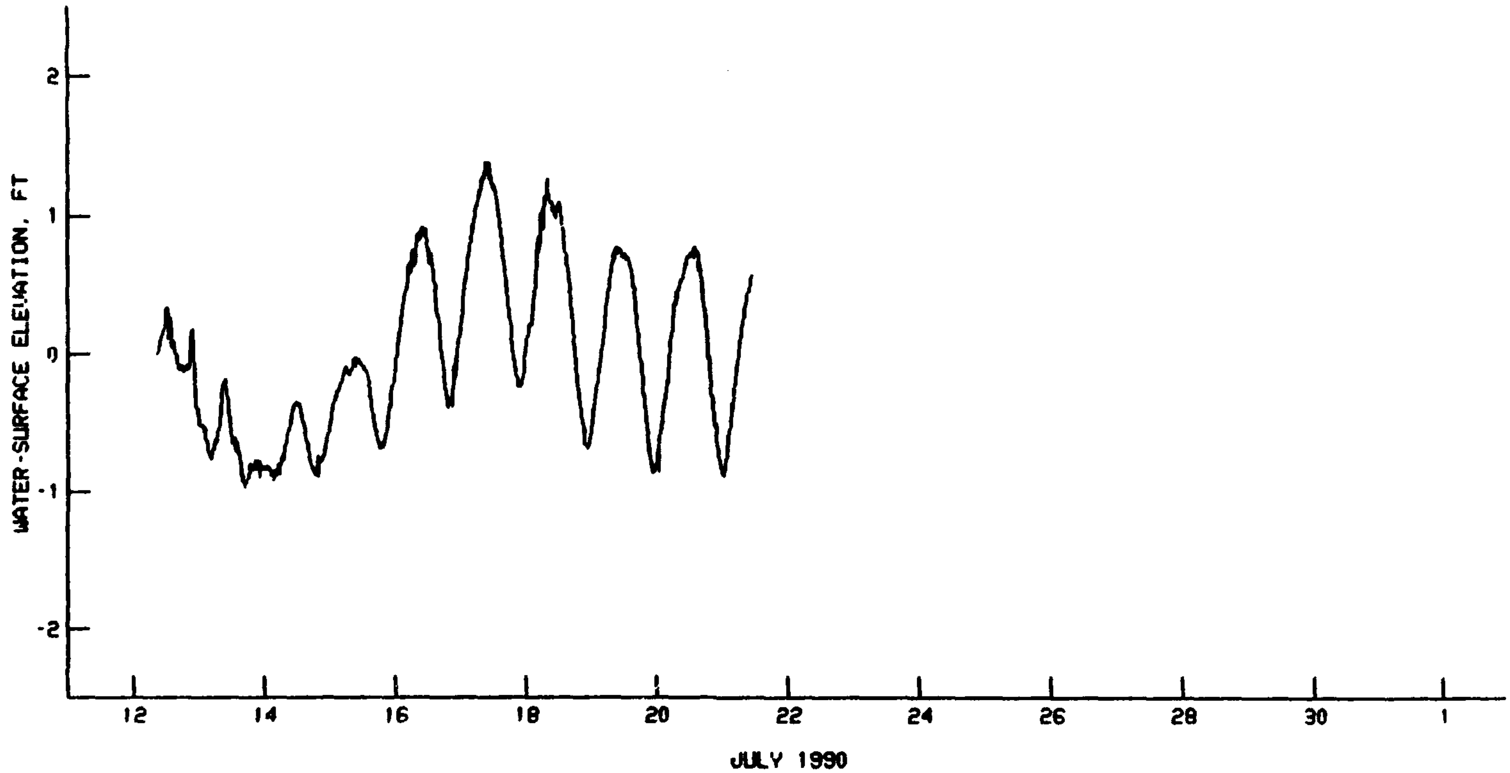


•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S7.0
12 - 31 DECEMBER 1990



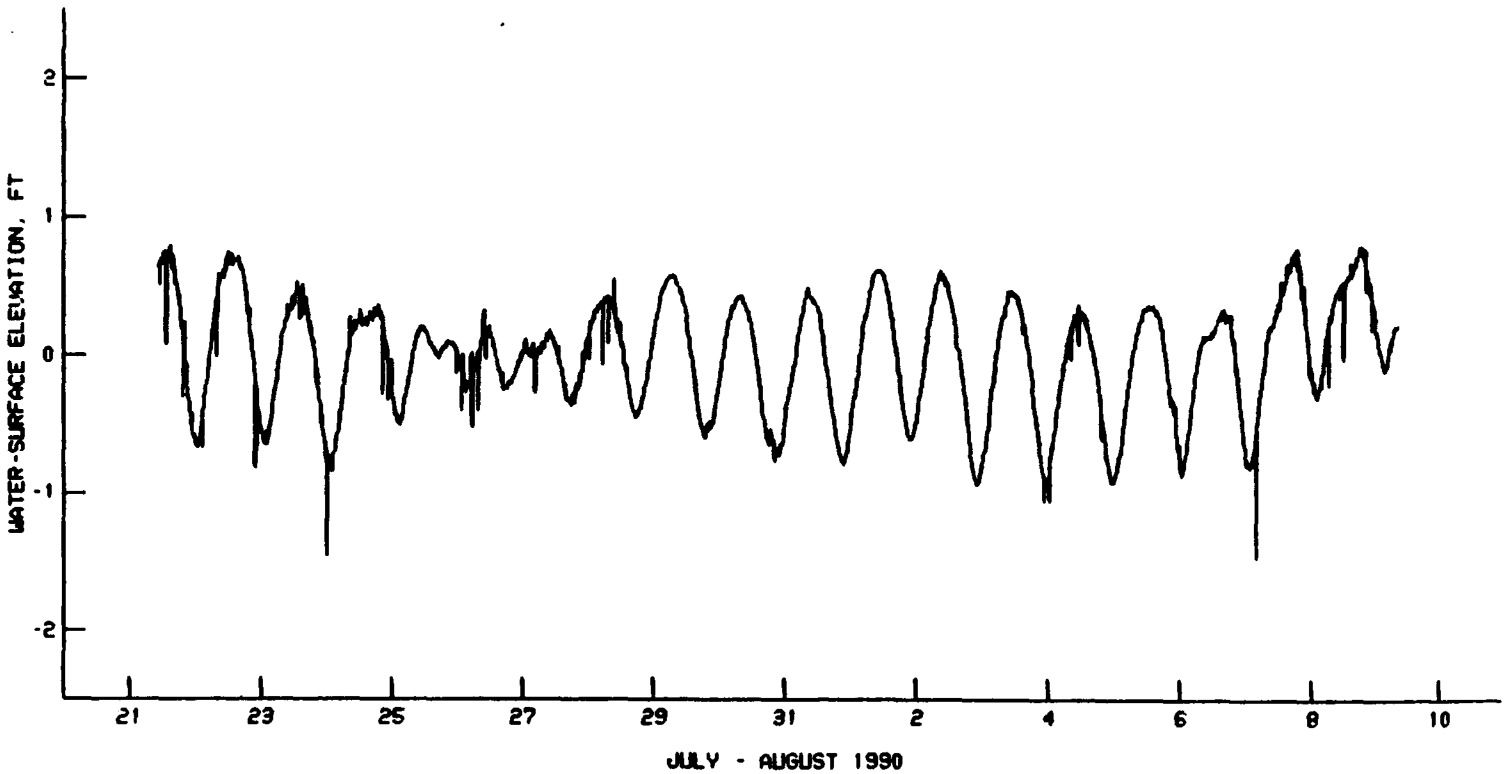
WATER-SURFACE ELEVATION*
AT STATION S7.0
1 - 17 JANUARY 1991
WATER-SURFACE ELEVATION, FT
2
1
0
-1
-2
1
3
5
7
9
11
13
15
17
19
21
JANUARY 1991
*MEAN WATER-SURFACE ELEVATION USED AS DATUM



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

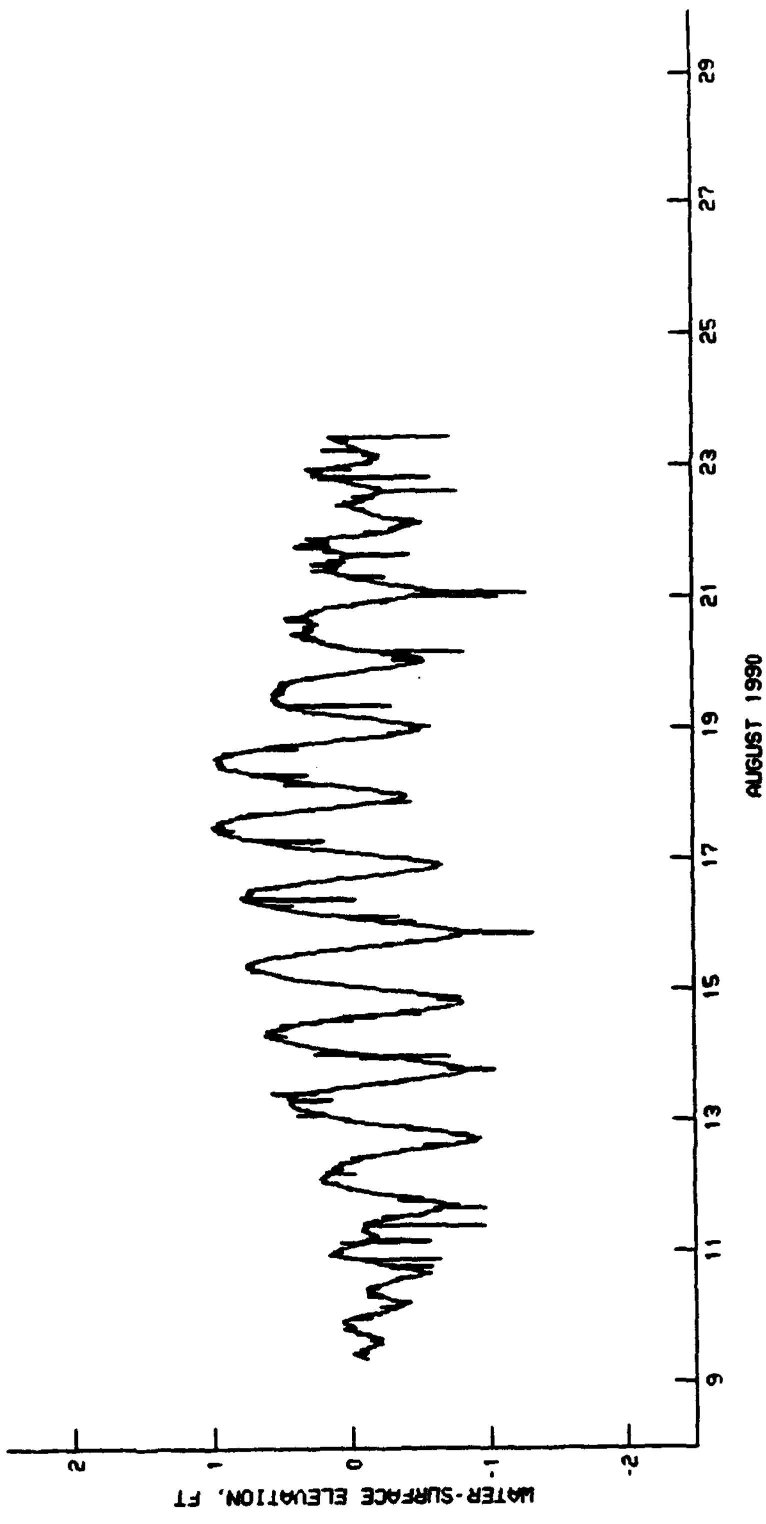
**WATER-SURFACE ELEVATION•
AT STATION S10.0**

12 - 21 JULY 1990



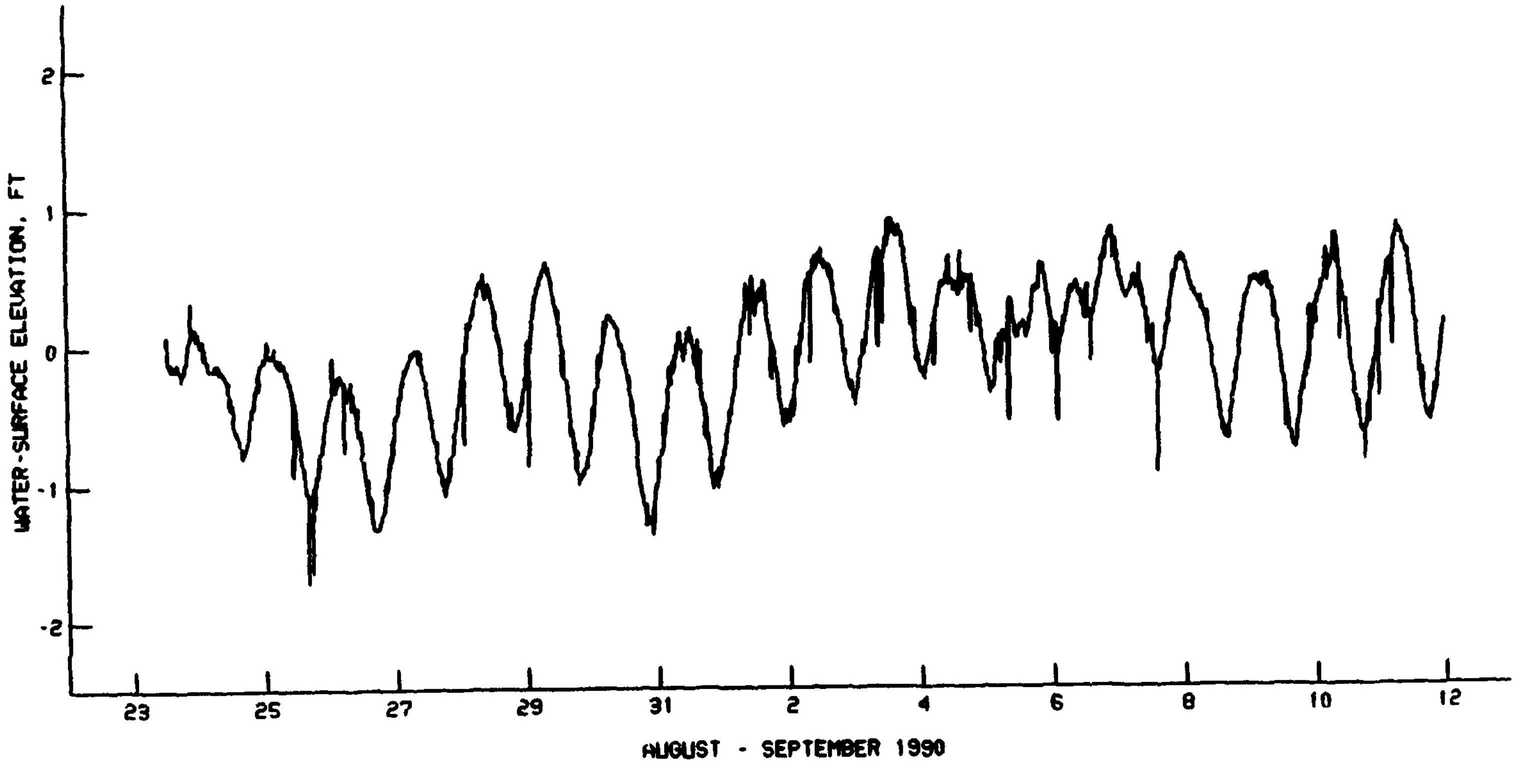
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S10.0
21 JULY - 9 AUGUST 1990



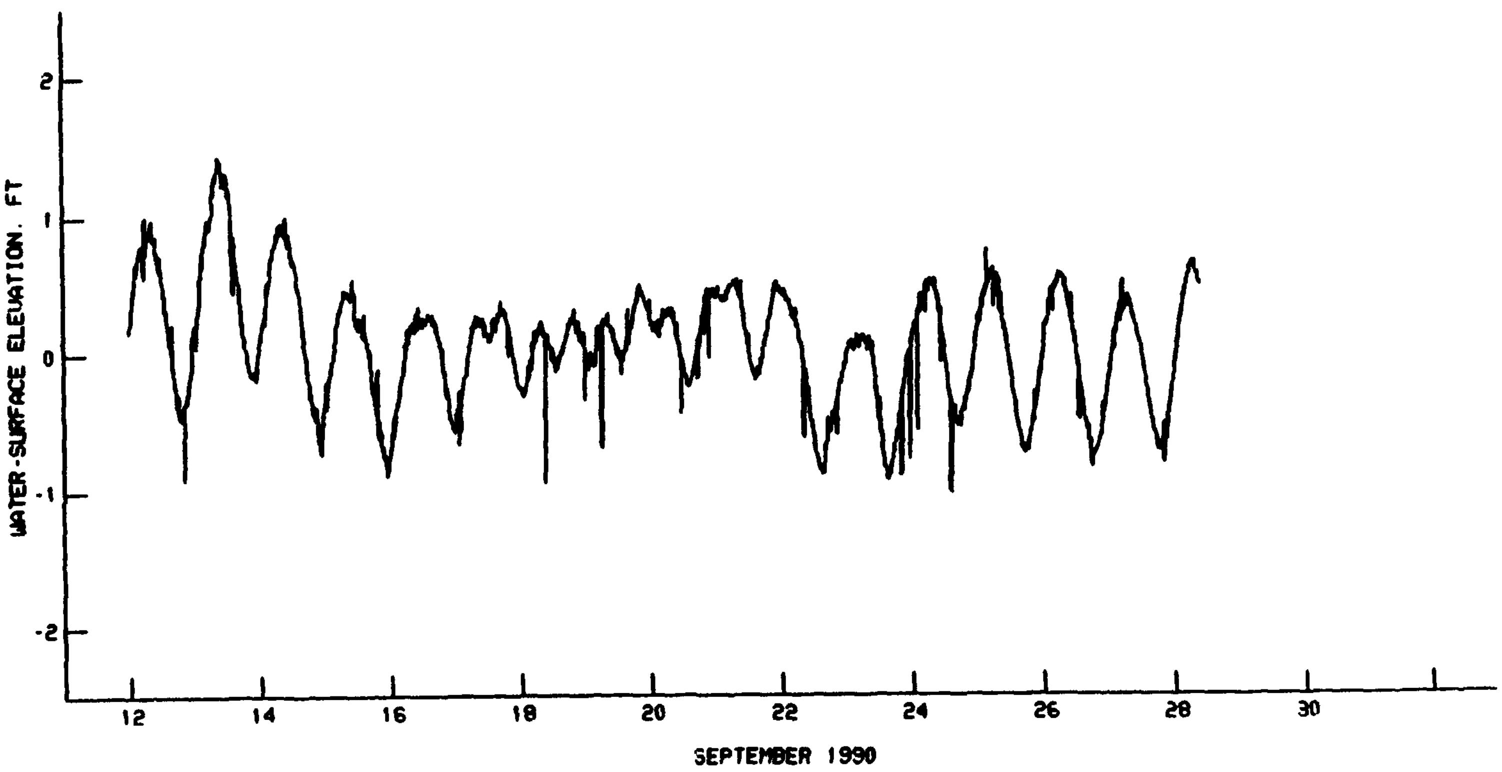
WATER-SURFACE ELEVATION*
AT STATION S10.0
9 - 23 AUGUST 1990

*MEAN WATER-SURFACE ELEVATION USED AS DATUM



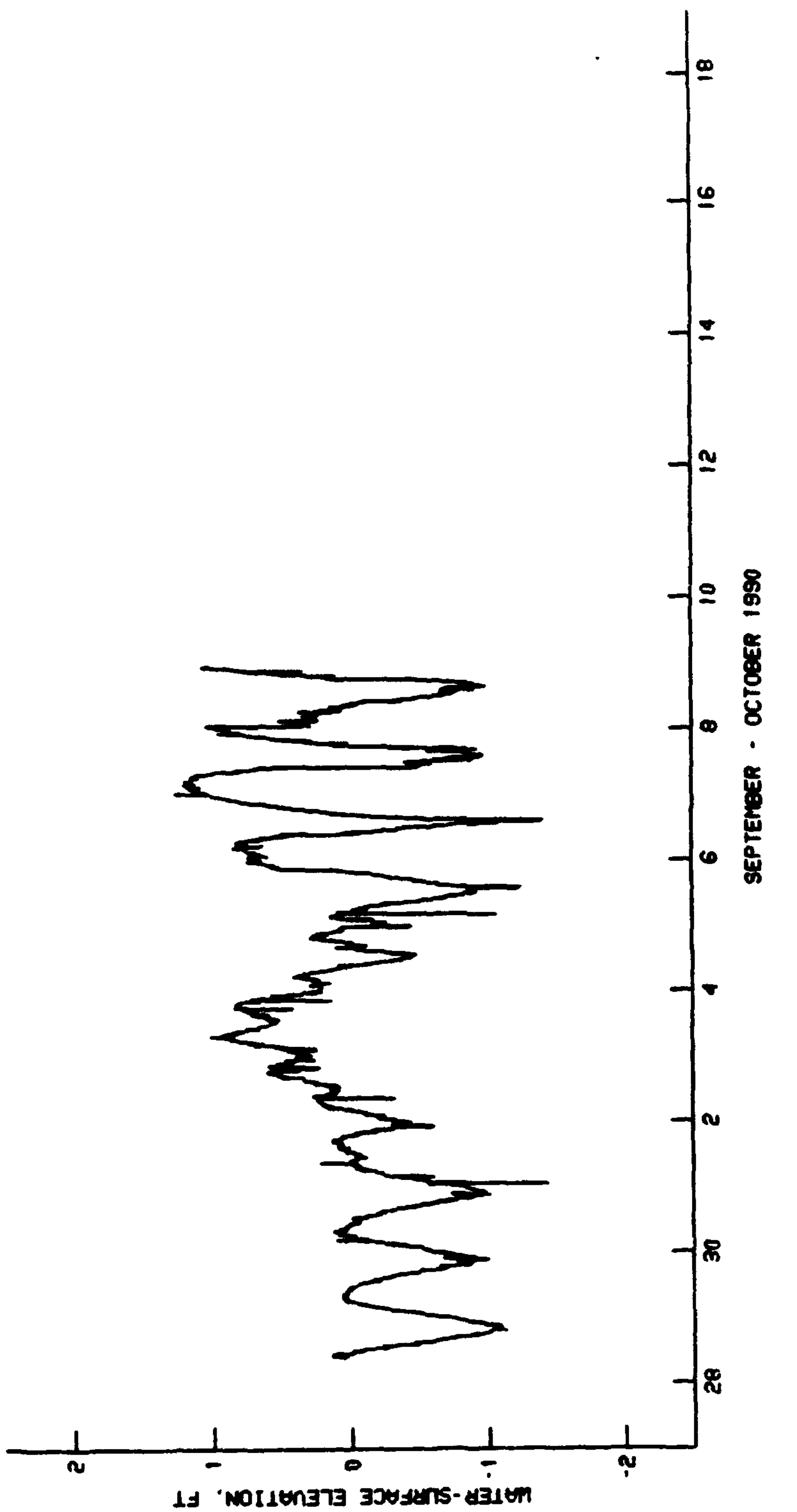
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION*
AT STATION S10.0
23 AUGUST -12 SEPTEMBER 1990



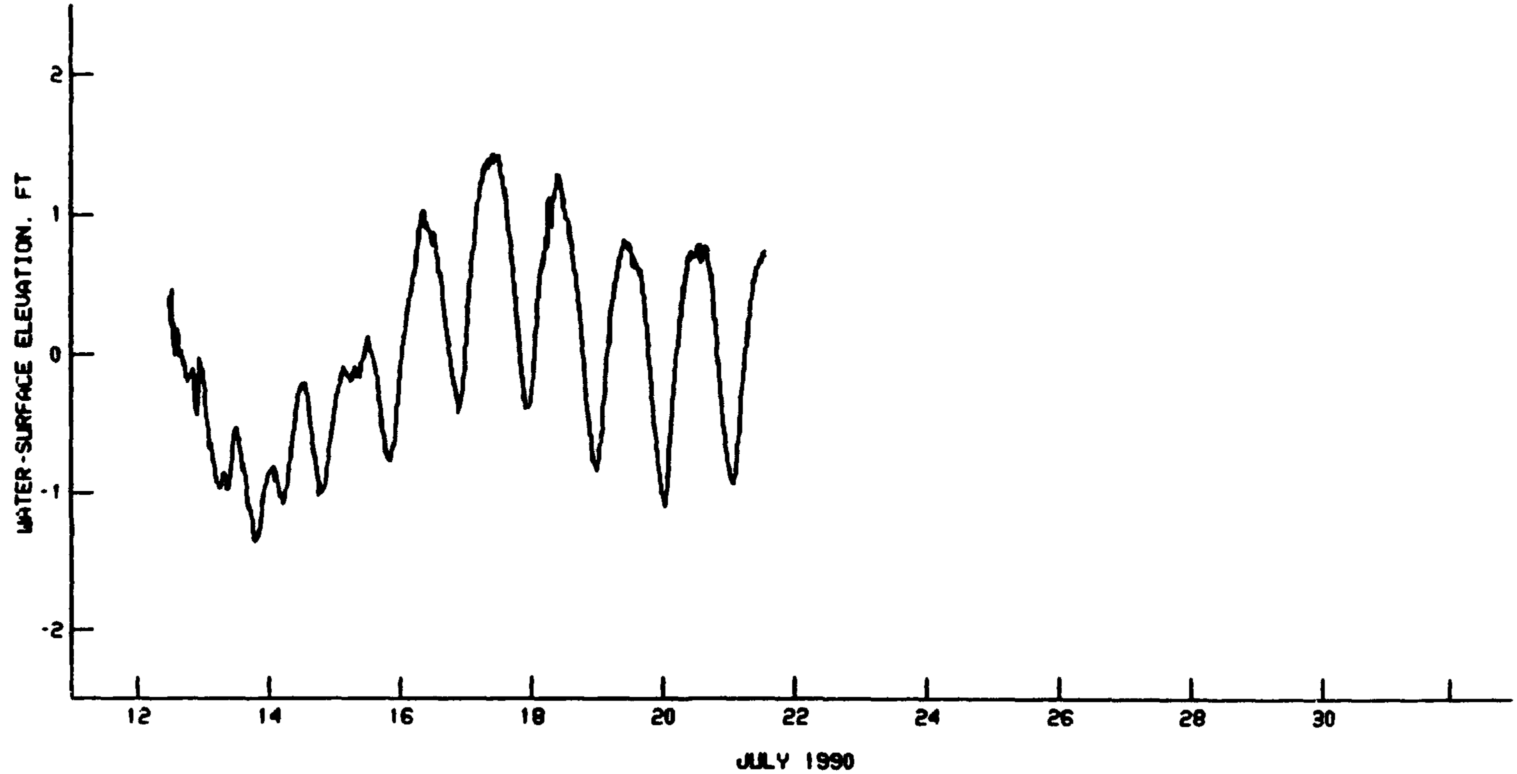
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S10.0
12 - 28 SEPTEMBER 1990



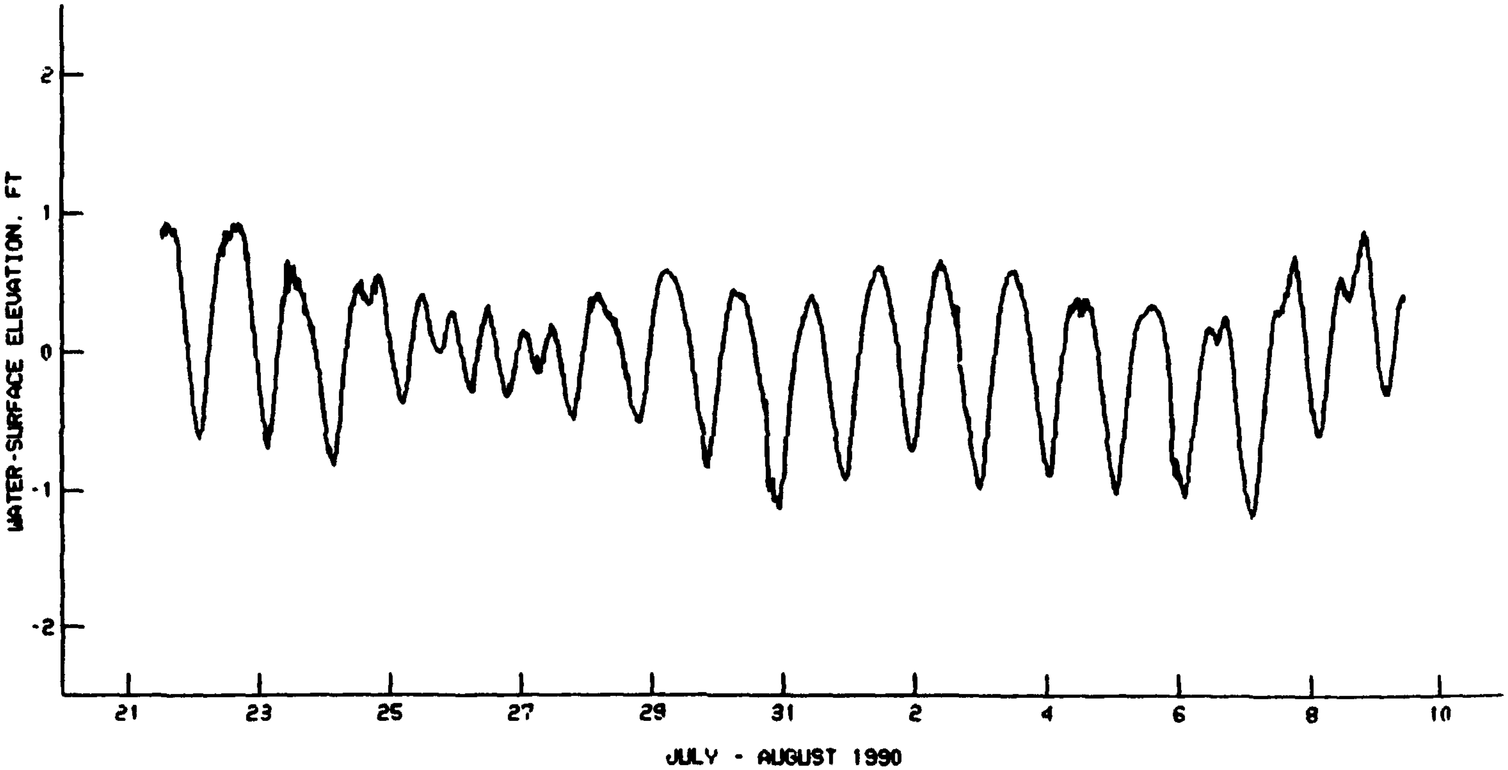
WATER-SURFACE ELEVATION*
AT STATION S10.0
28 SEPTEMBER - 8 OCTOBER 1990

*MEAN WATER-SURFACE ELEVATION USED AS DATUM



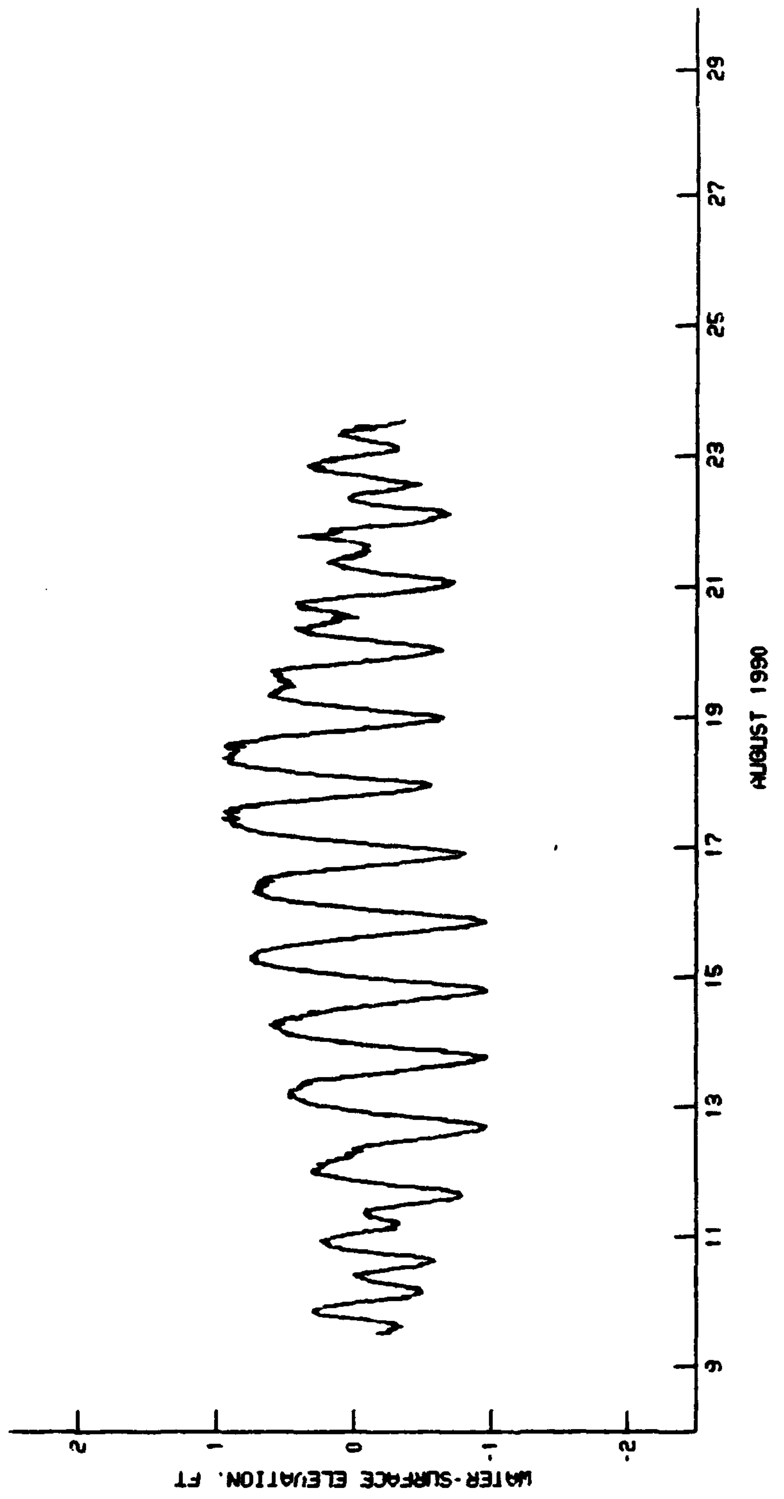
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S14.0
12 - 21 JULY 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

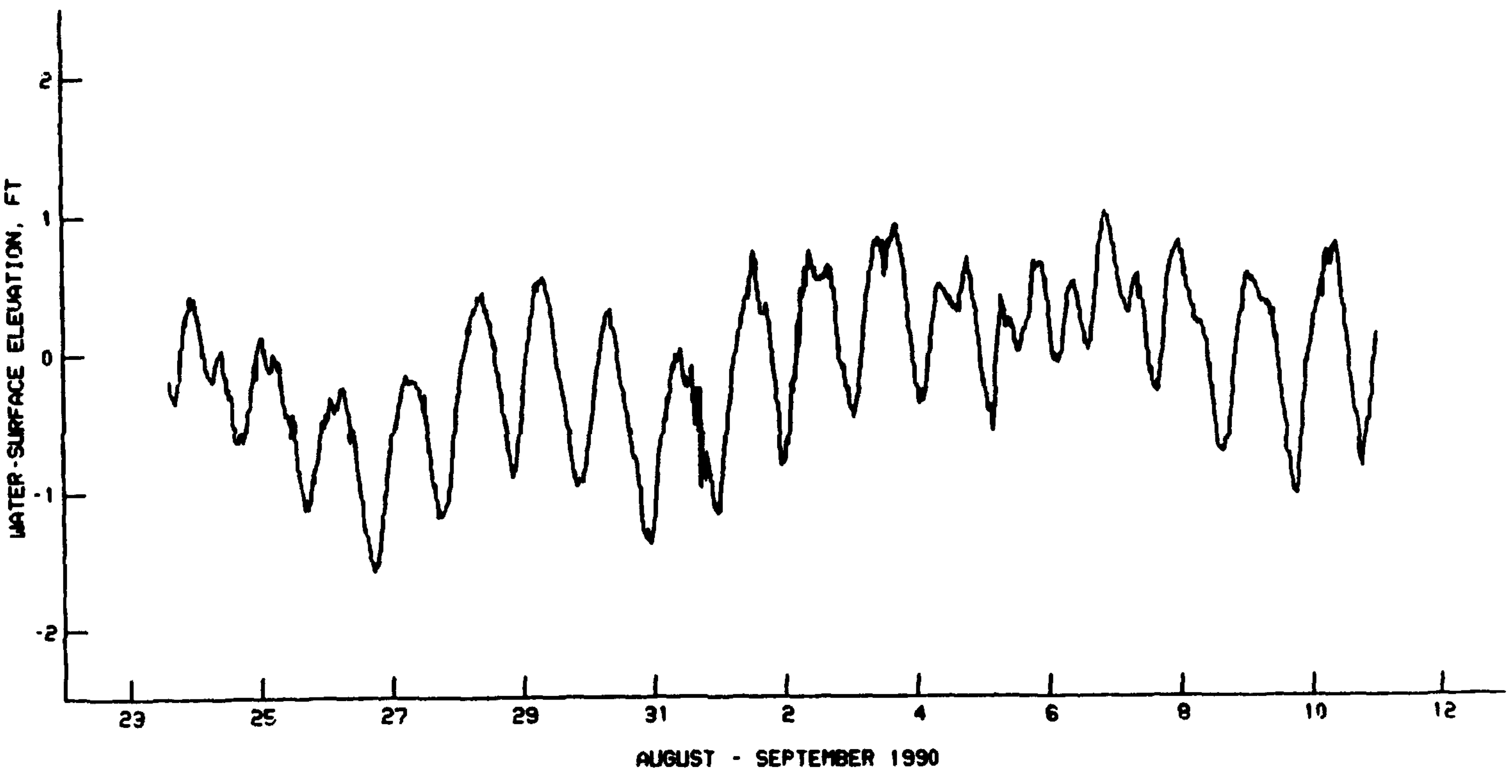
WATER-SURFACE ELEVATION•
AT STATION S14.0
21 JULY - 9 AUGUST 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S14.0
9 -23 AUGUST 1990

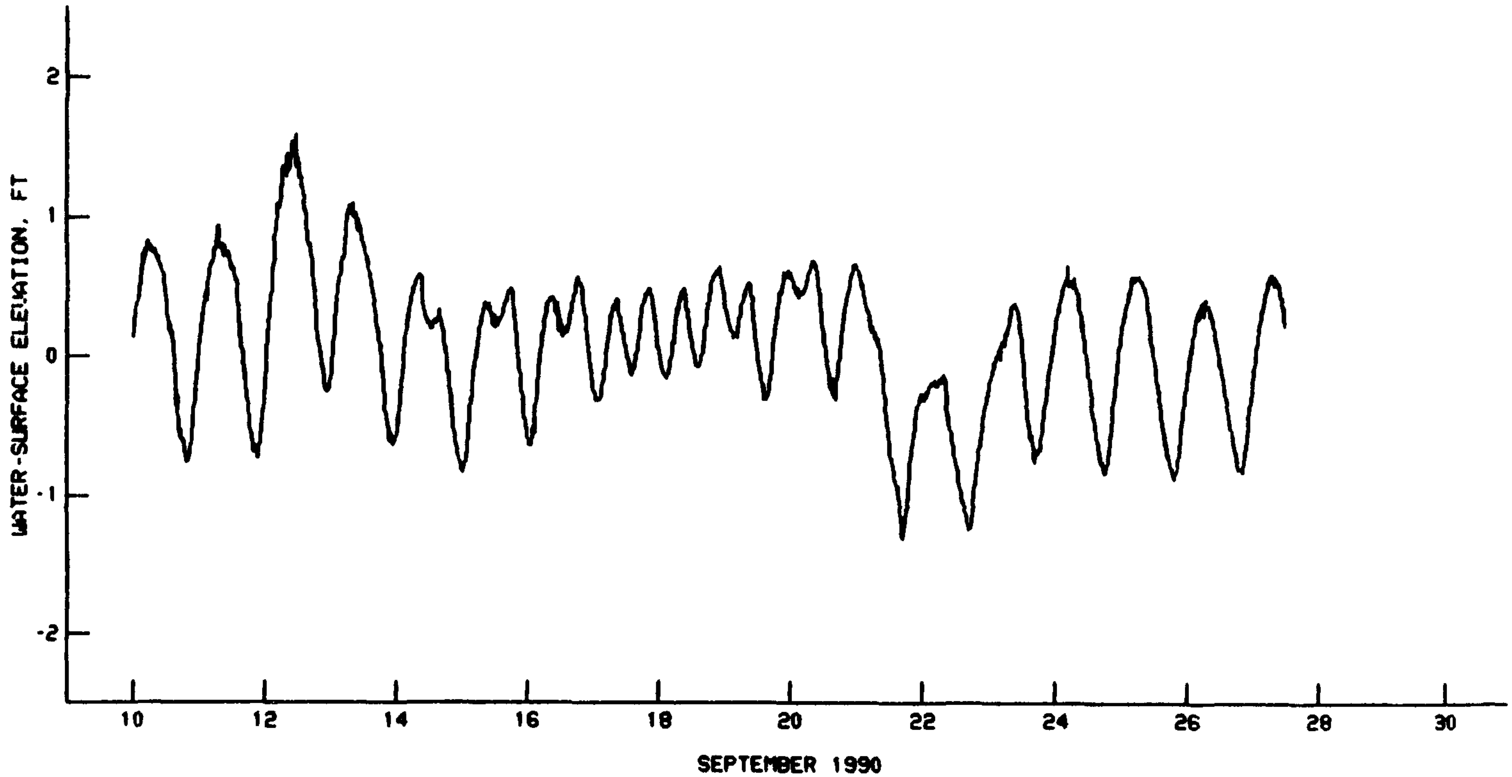
Plate 94



*MEAN WATER-SURFACE ELEVATION USED AS DATUM

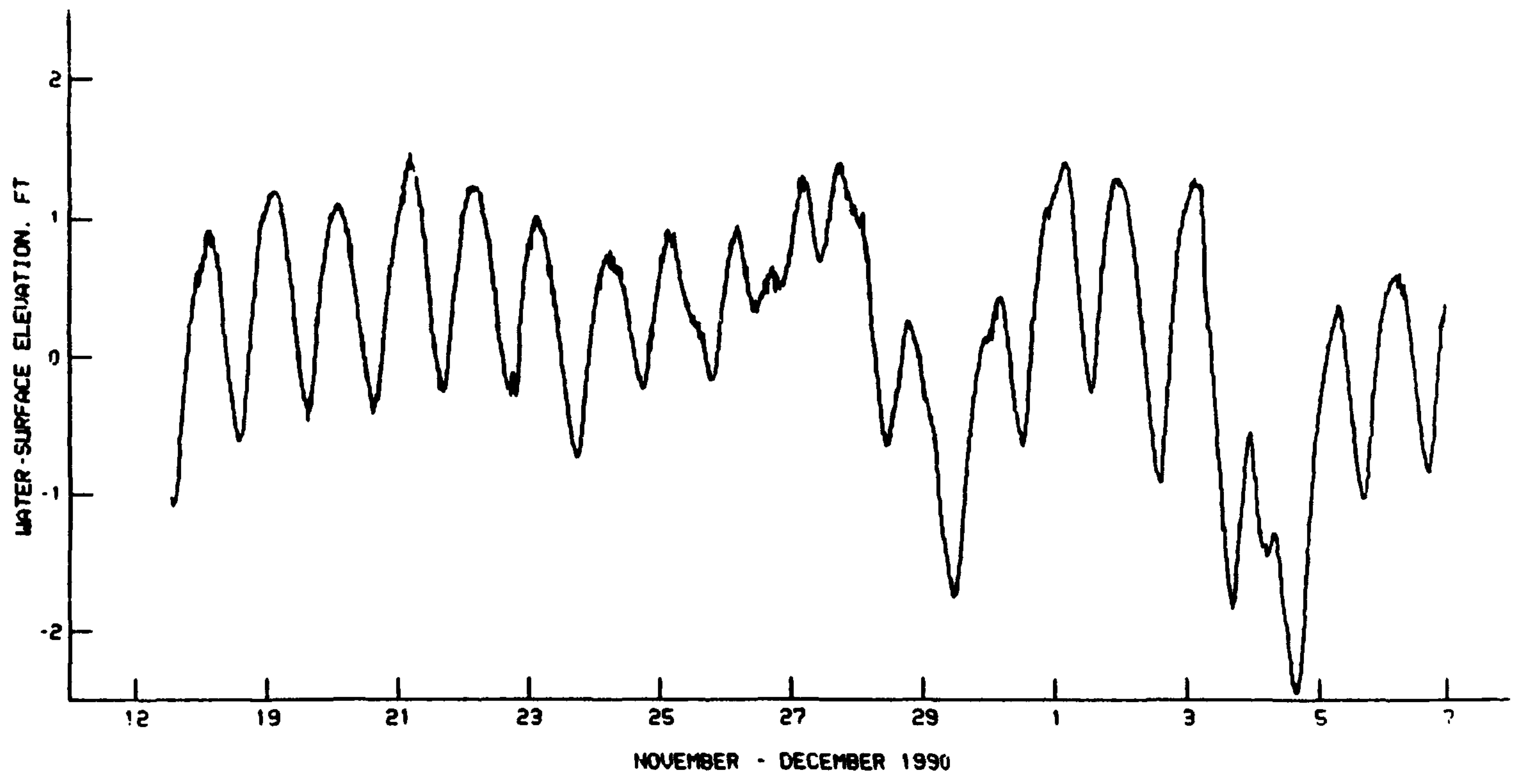
WATER-SURFACE ELEVATION* AT STATION S14.0

23 AUGUST - 10 SEPTEMBER 1990



*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION*
AT STATION S14.0
10 - 28 SEPTEMBER 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S14.0
17 NOVEMBER - 7 DECEMBER 1990

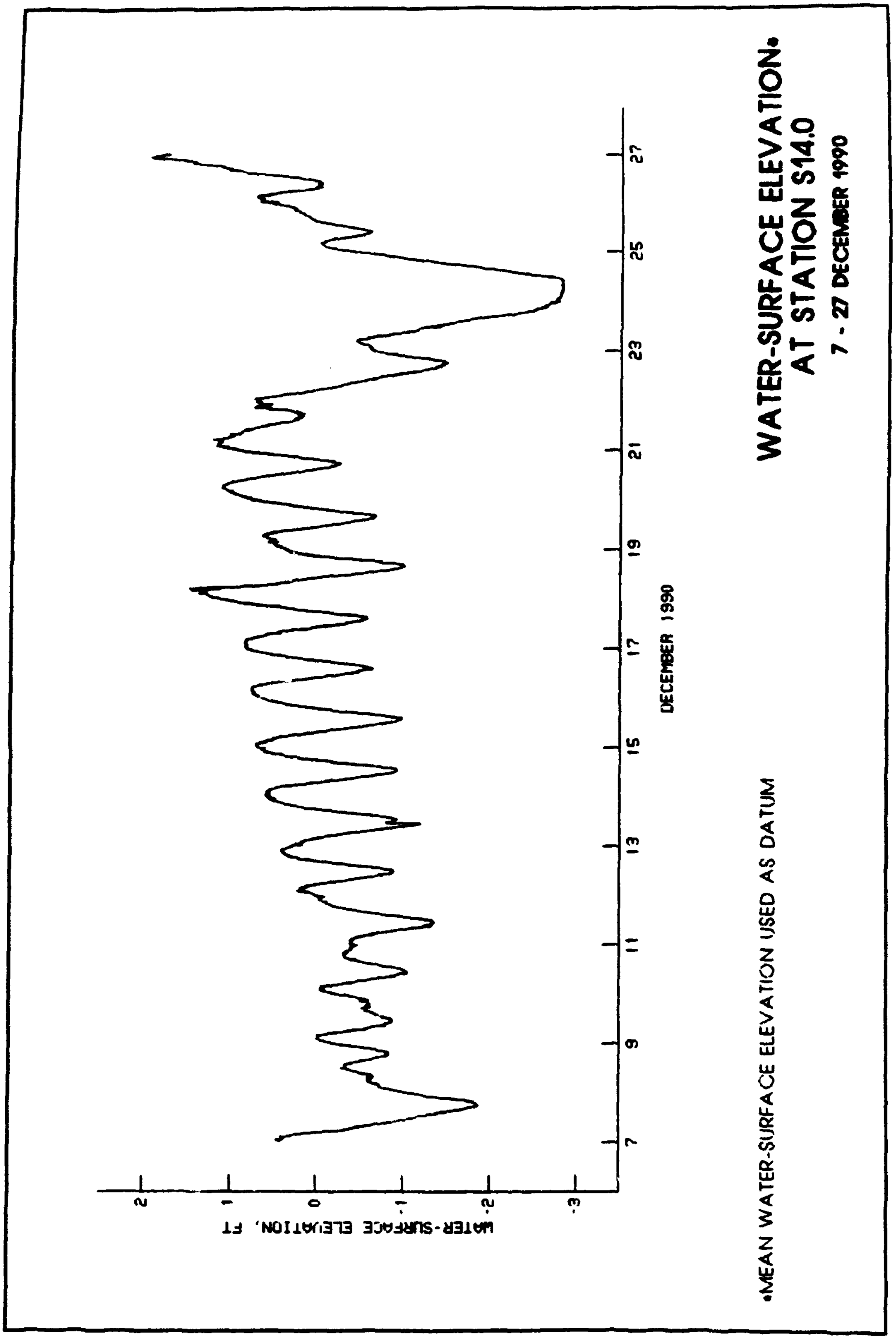
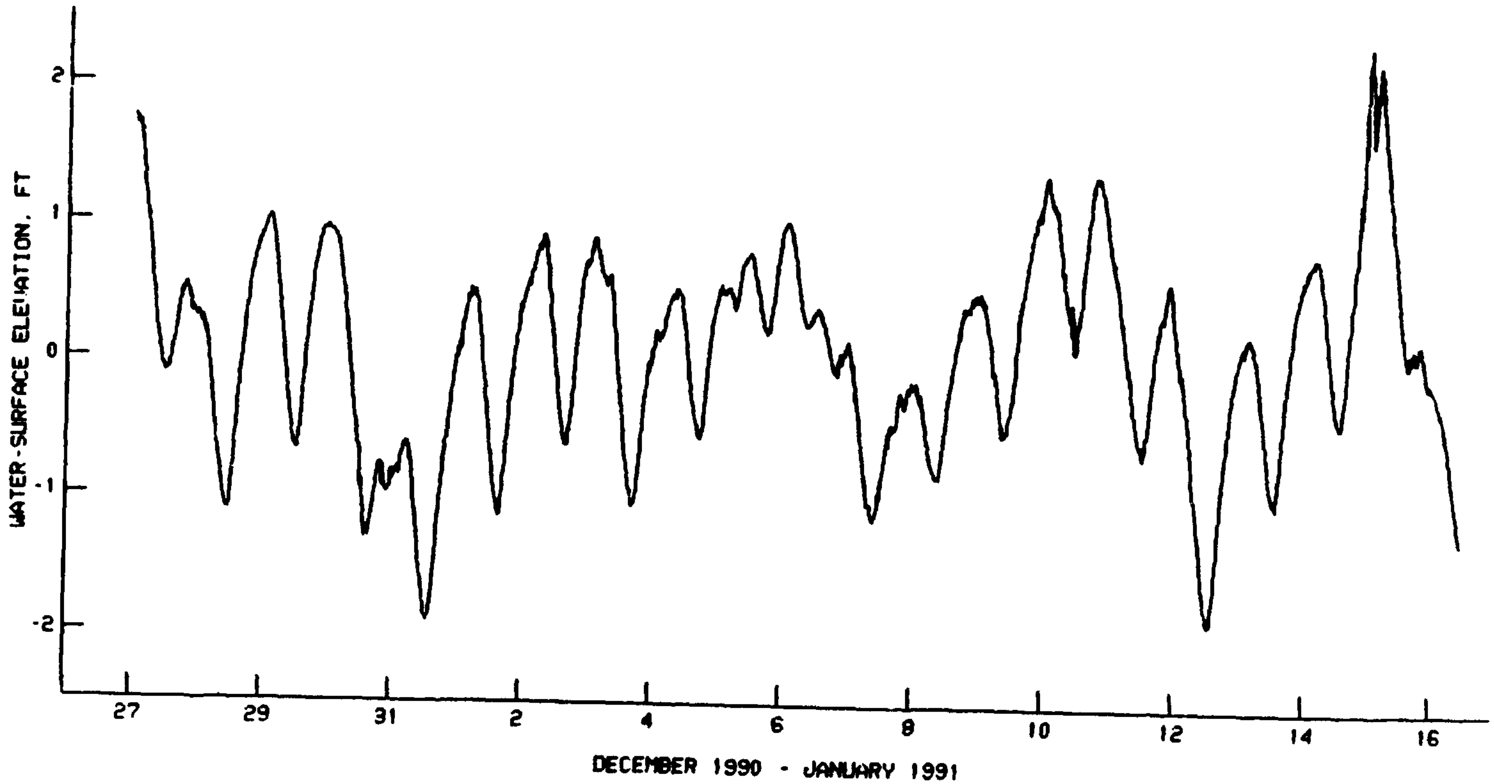
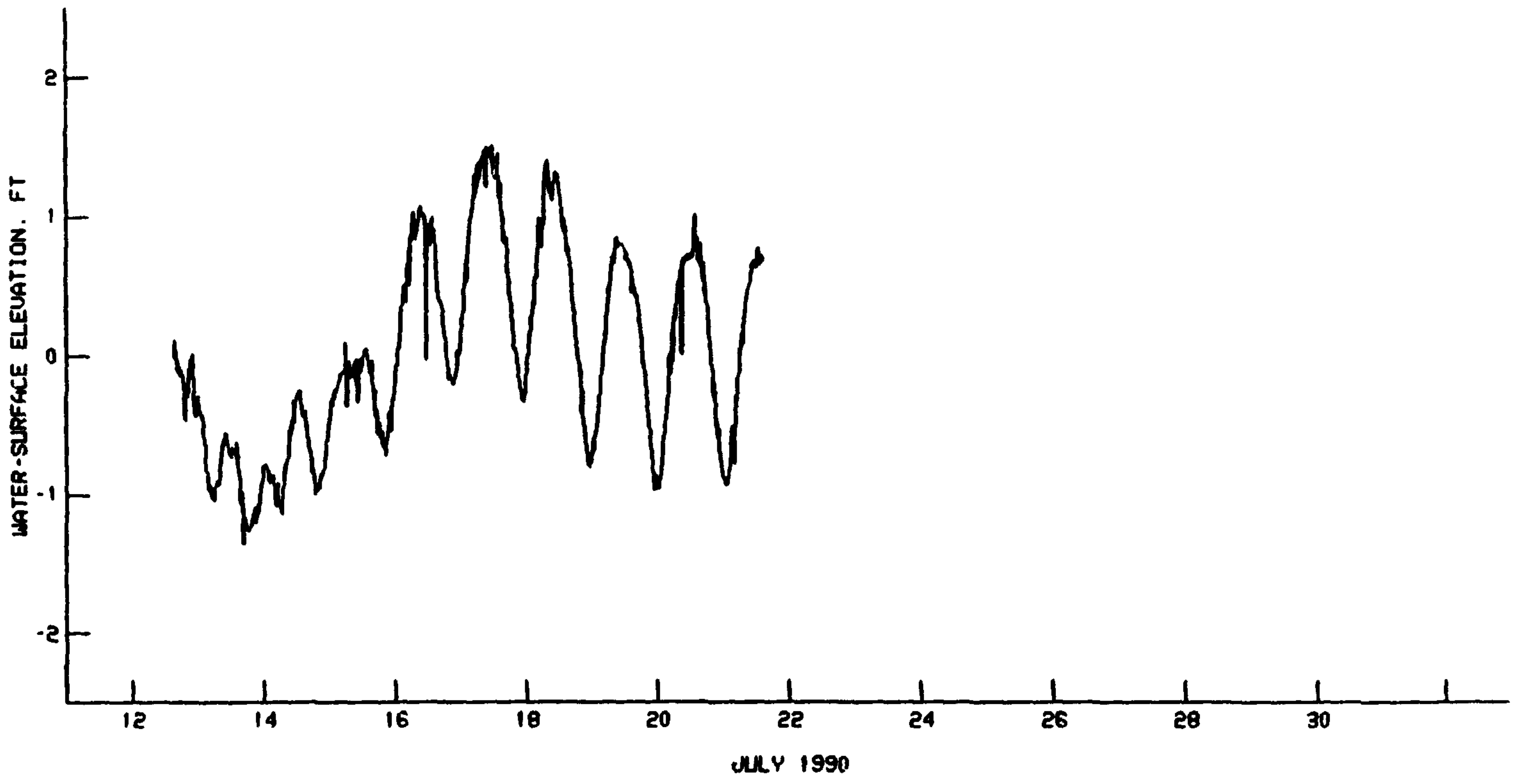

WATER-SURFACE ELEVATION*
AT STATION S14.0
7 - 27 DECEMBER 1990
WATER-SURFACE ELEVATION, FT
2
1
0
-1
-2
-3
7
9
11
13
15
17
19
21
23
25
27
DECEMBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

Plate 98



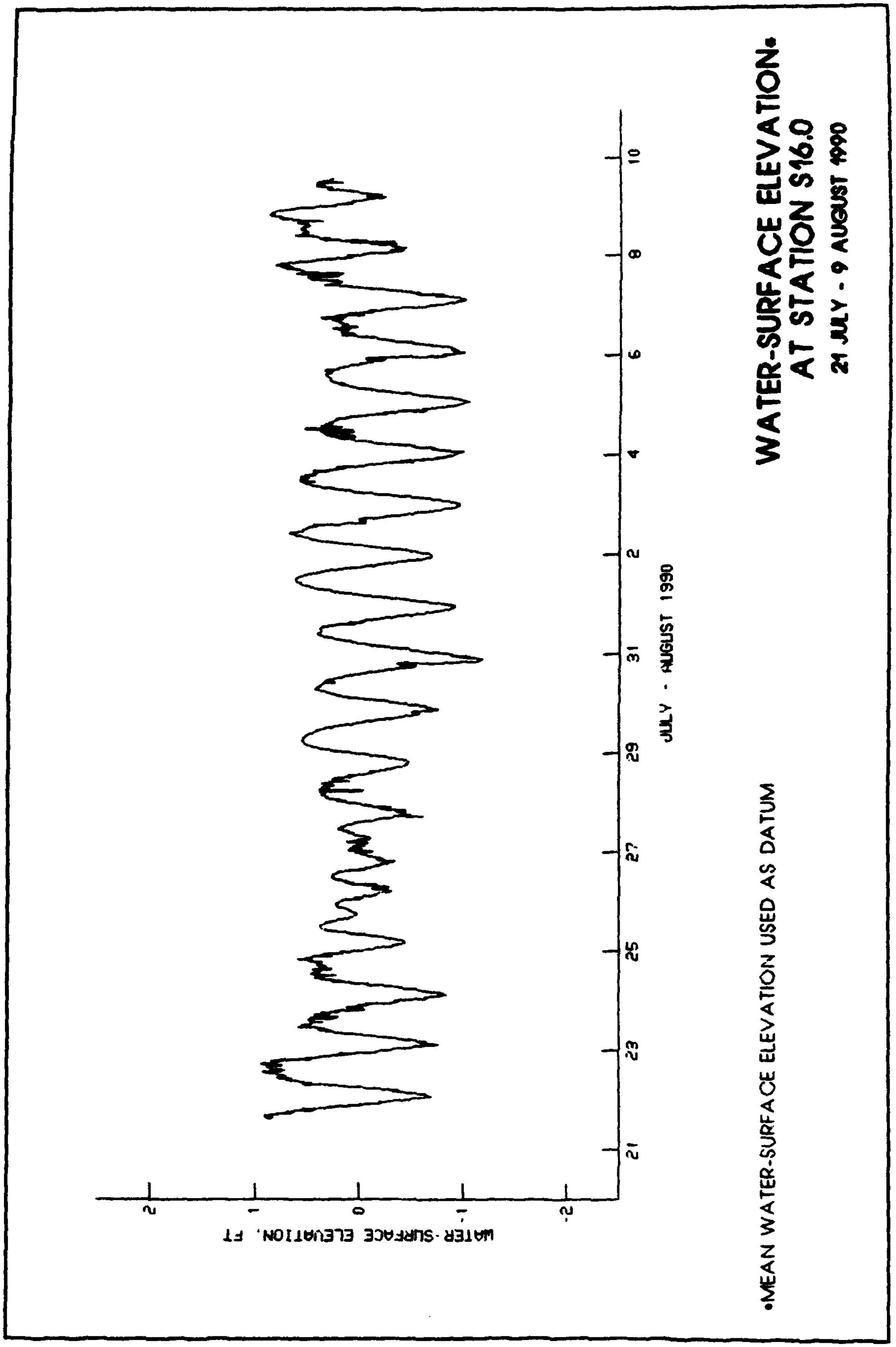
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

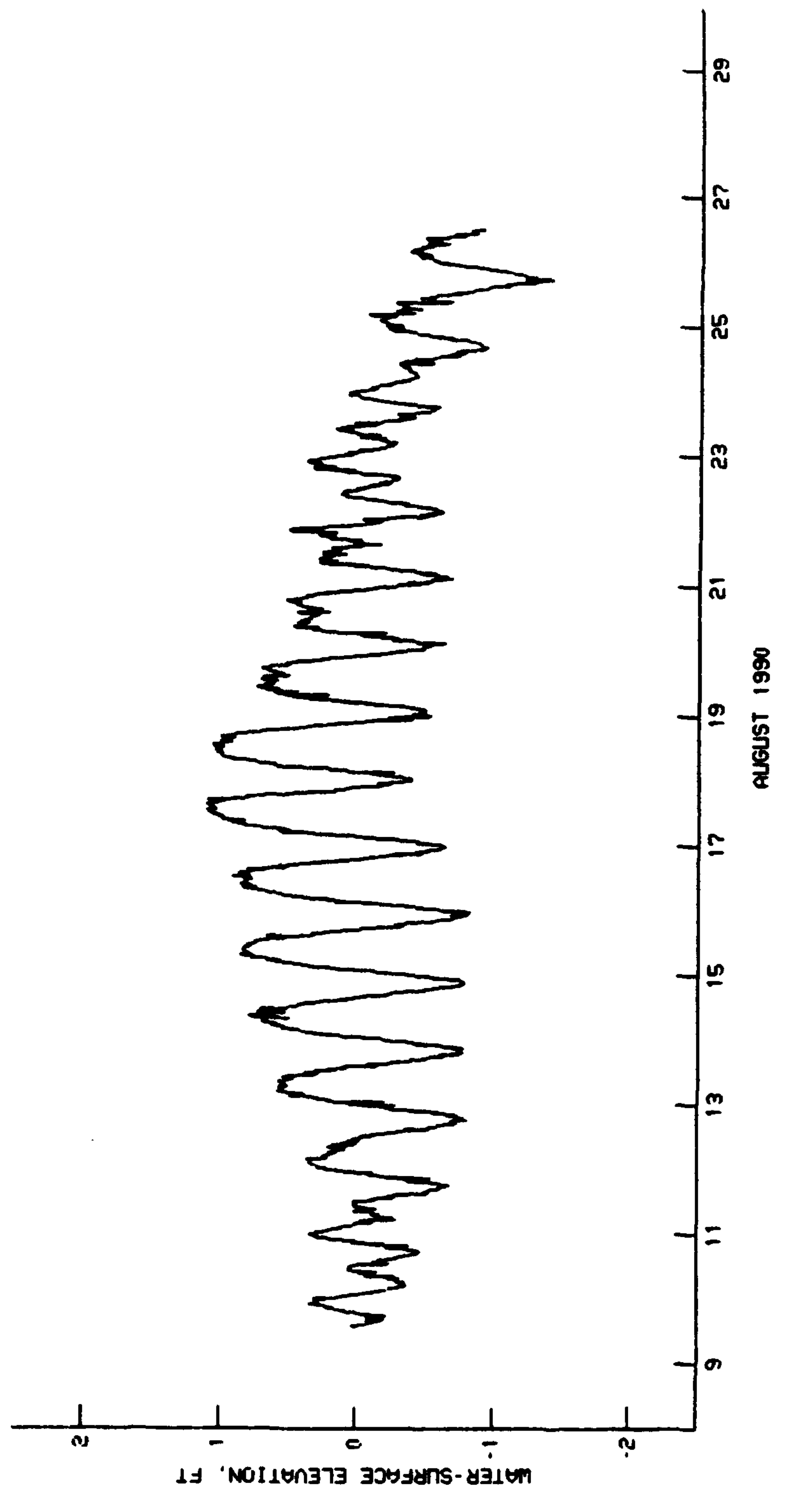
WATER-SURFACE ELEVATION•
AT STATION S14.0
27 DECEMBER 1990 - 16 JANUARY 1991



*MEAN WATER-SURFACE ELEVATION USED AS DATUM

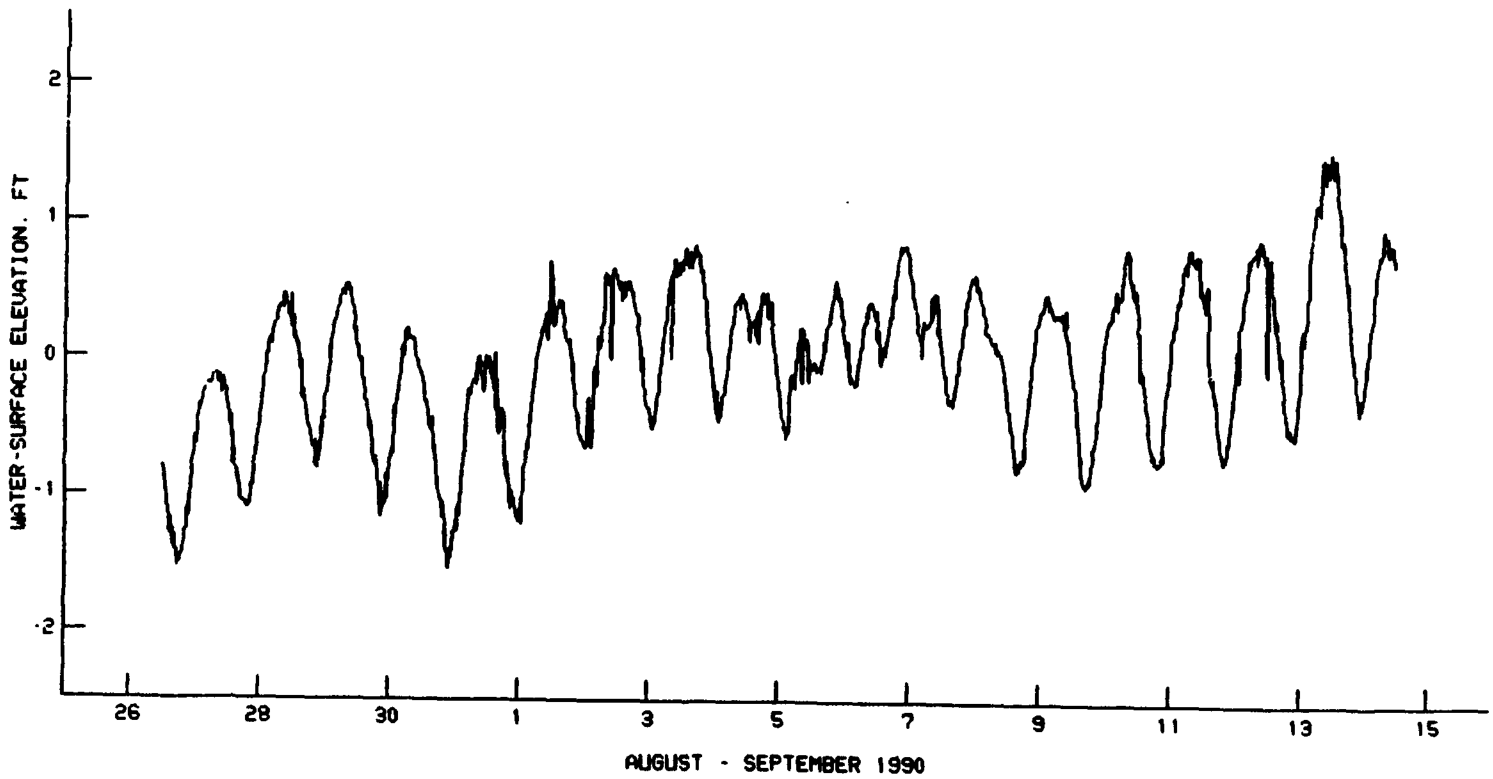
WATER-SURFACE ELEVATION*
AT STATION S16.0
12 - 21 JULY 1990


WATER-SURFACE ELEVATION*
AT STATION S16.0
21 JULY - 9 AUGUST 1990
WATER-SURFACE ELEVATION, FT
2
1
0
-1
-2
21
23
25
27
29
31
2
4
6
8
10
JULY - AUGUST 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM



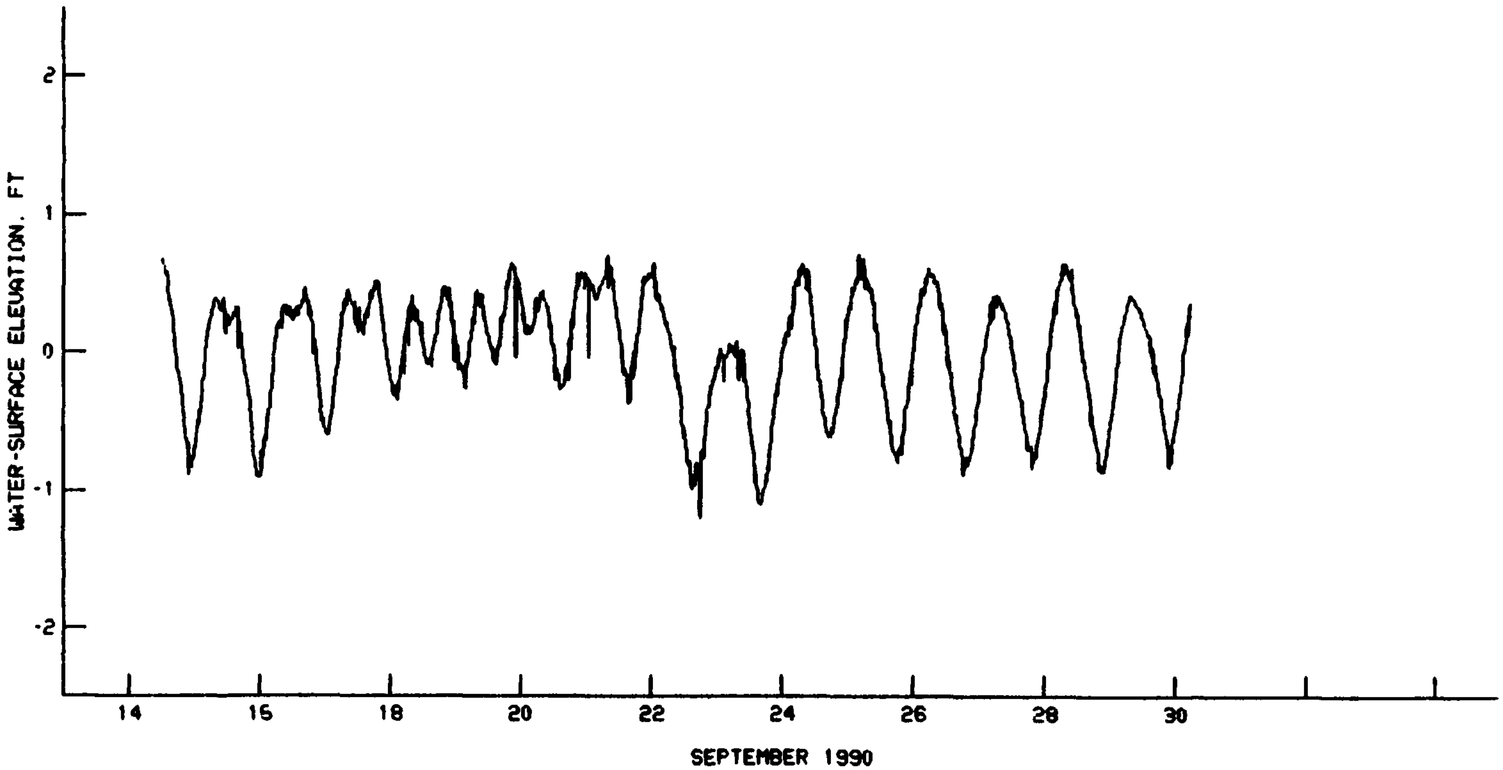
WATER-SURFACE ELEVATION*
AT STATION S16.0
9 - 26 AUGUST 1990

*MEAN WATER-SURFACE ELEVATION USED AS DATUM



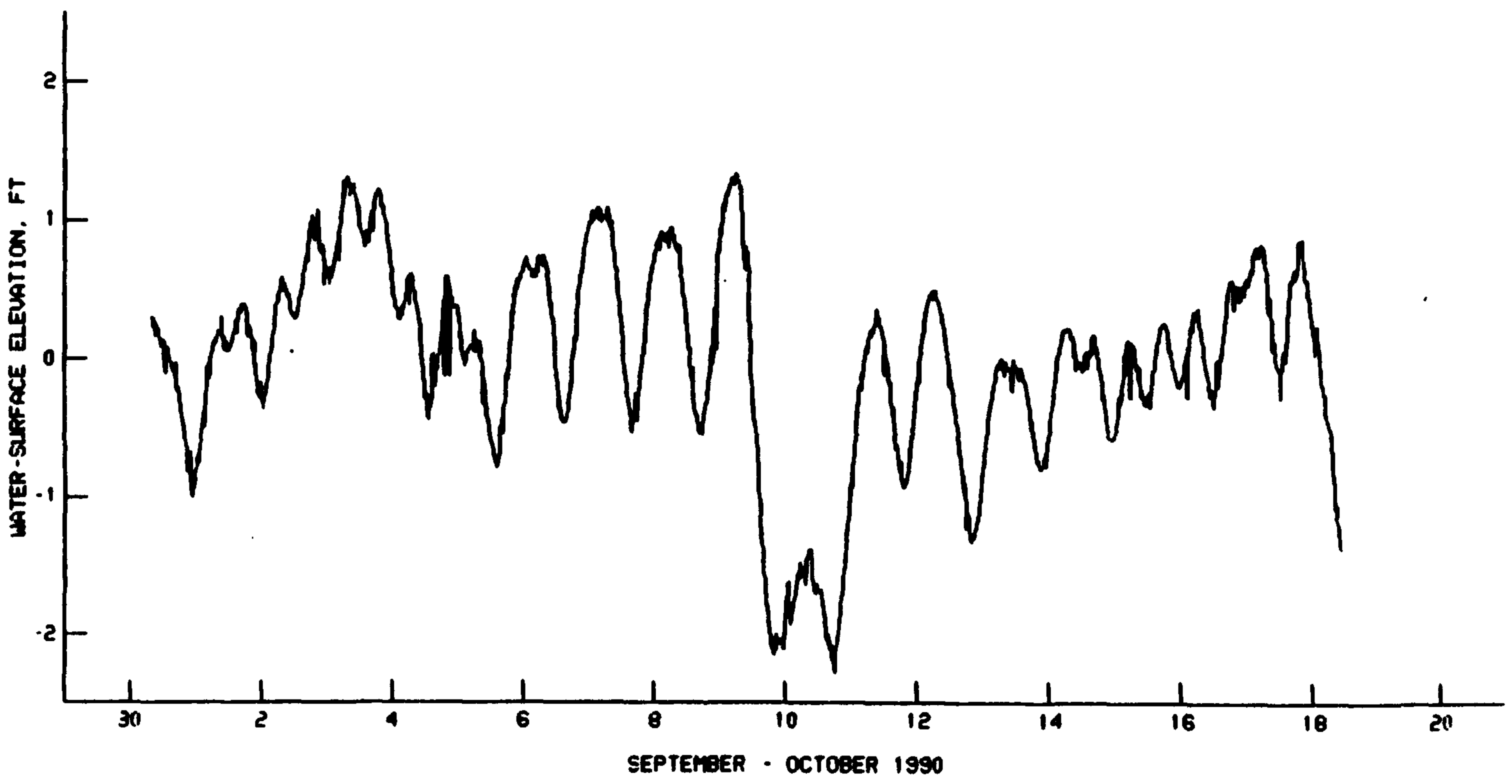
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION*
AT STATION S16.0
26 AUGUST-14 SEPTEMBER 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

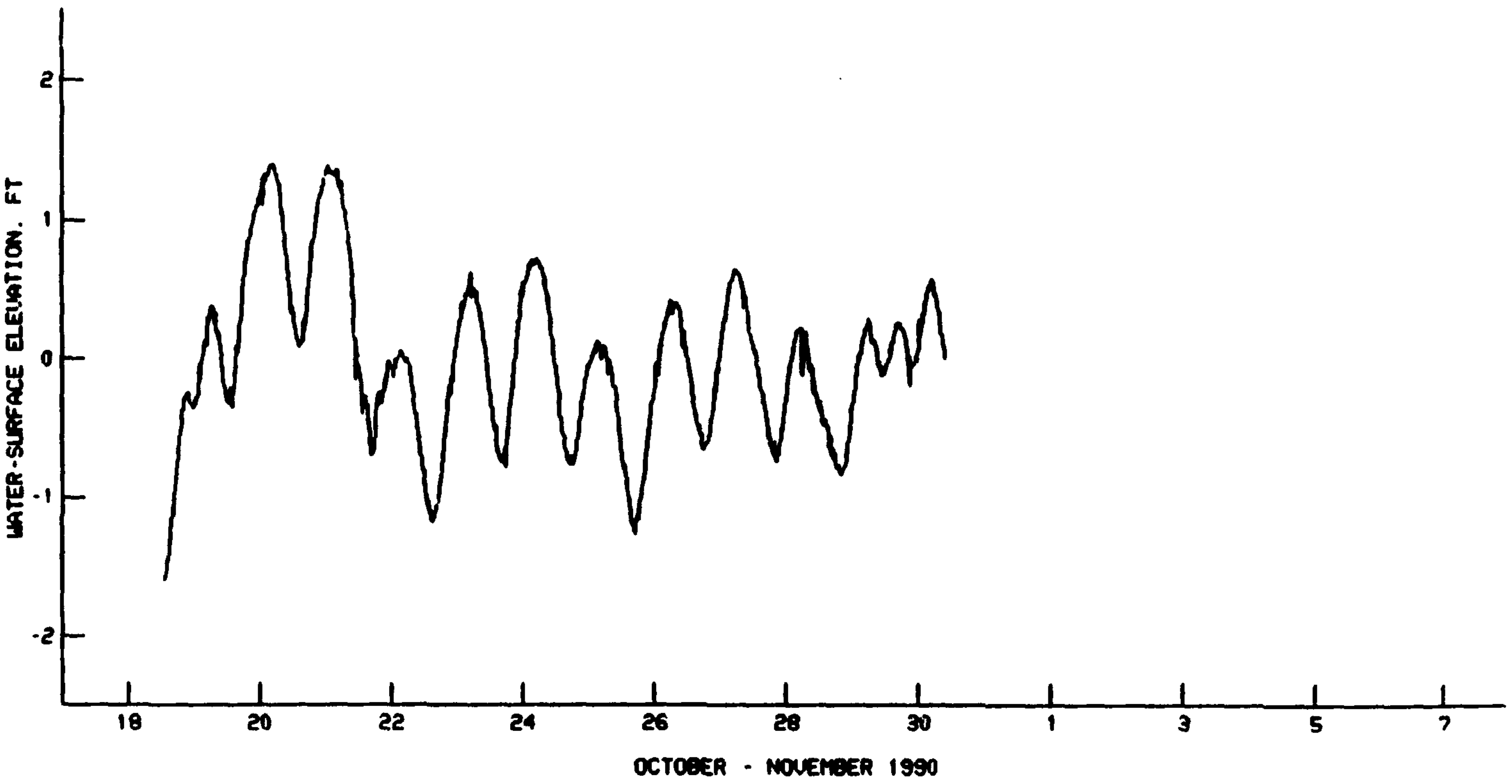
WATER-SURFACE ELEVATION•
AT STATION S16.0
14 - 30 SEPTEMBER 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

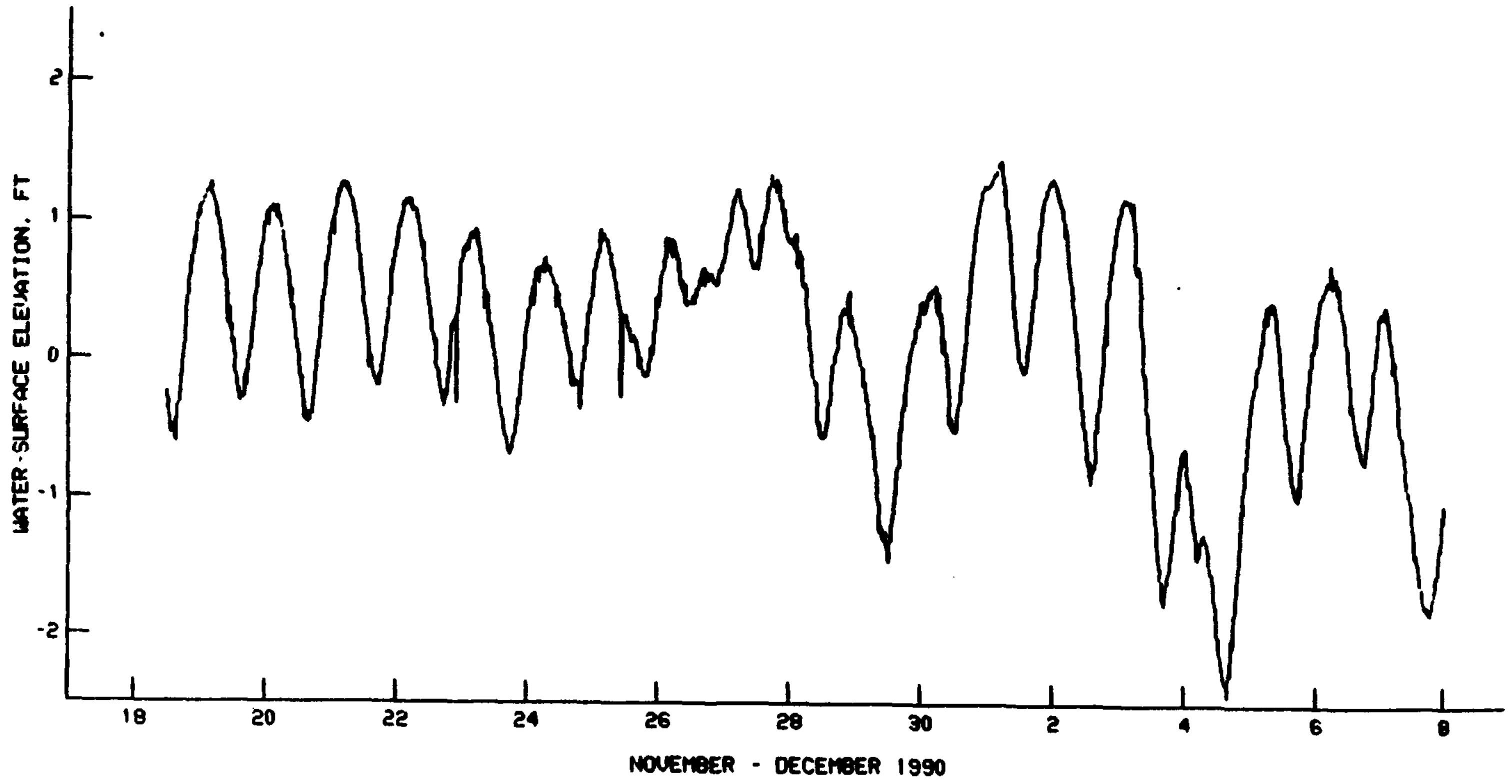
**WATER-SURFACE ELEVATION•
AT STATION S16.0**

30 SEPTEMBER - 18 OCTOBER 1990



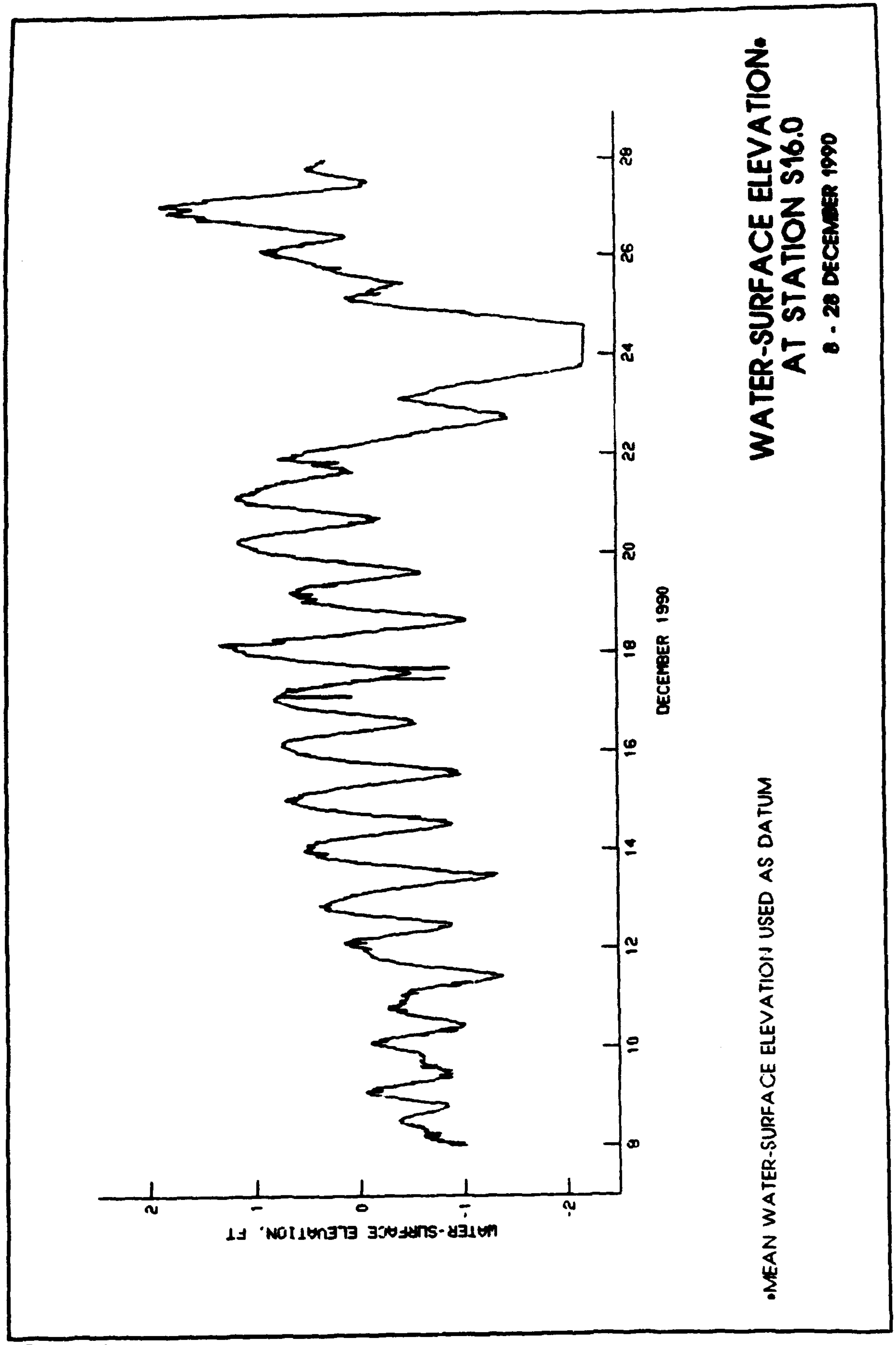
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

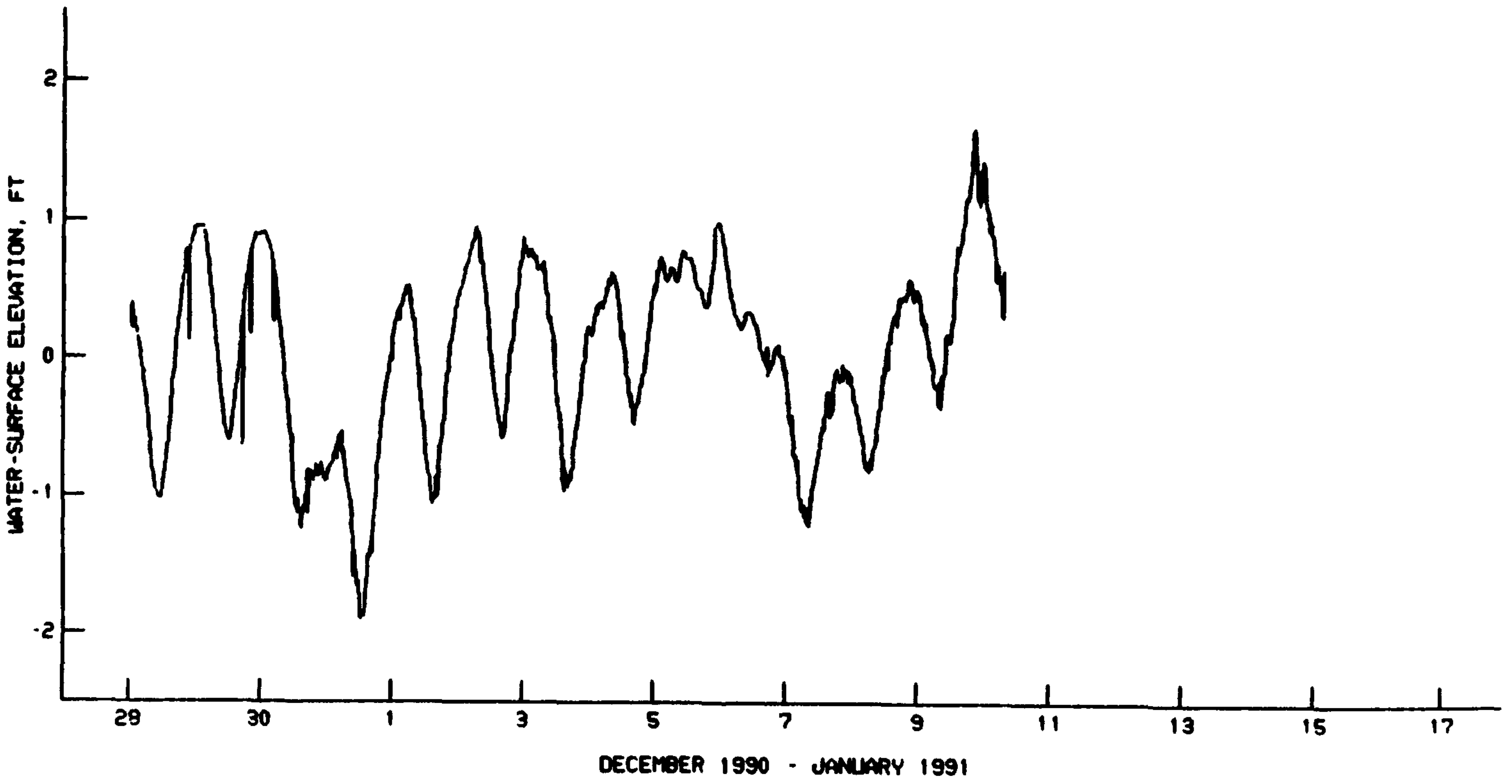
WATER-SURFACE ELEVATION•
AT STATION S16.0
18 - 31 OCTOBER 1990



•MEAN WATER-SURFACE ELEVATION USED AS DATUM

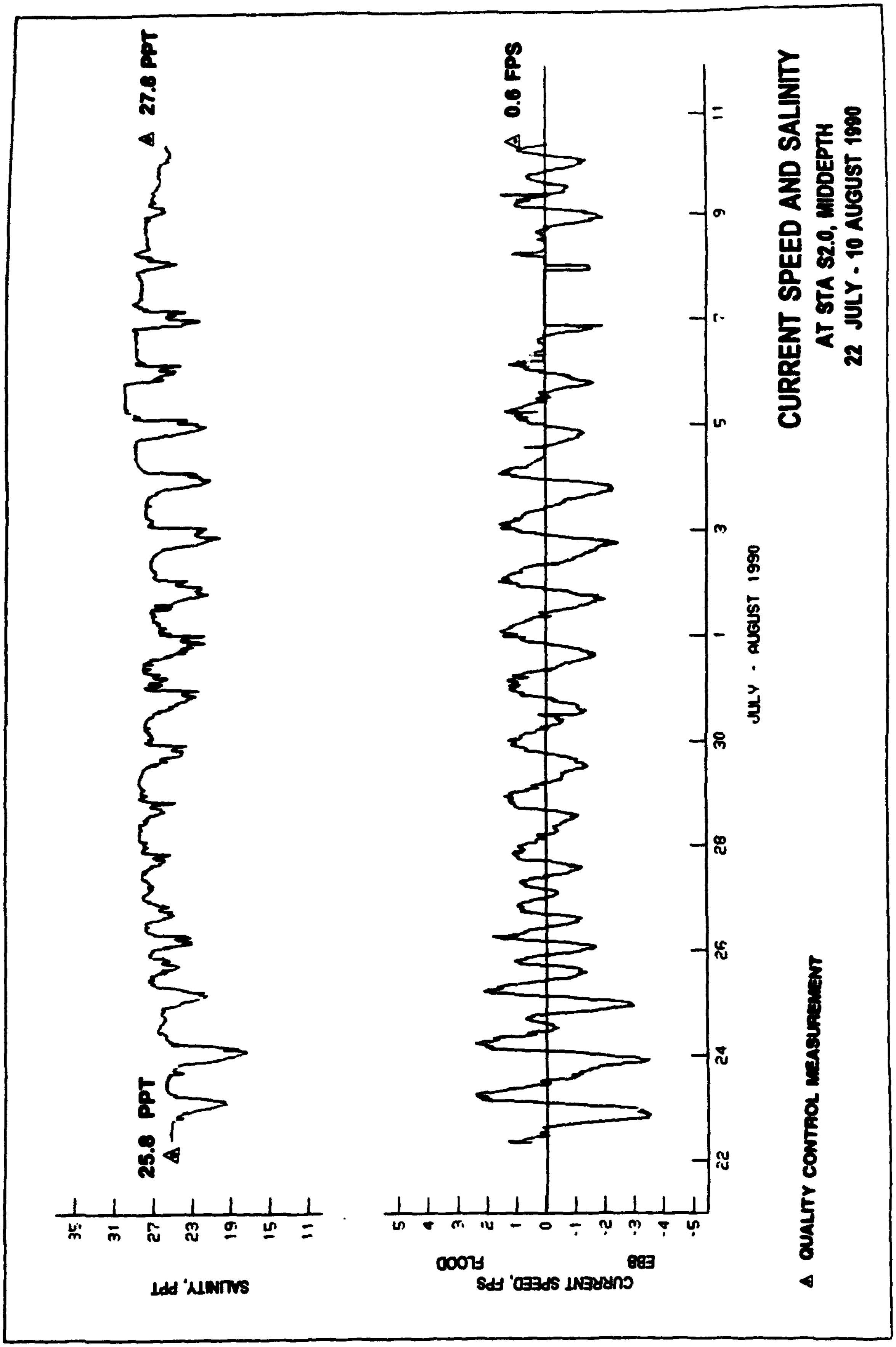
WATER-SURFACE ELEVATION•
AT STATION S16.0
18 NOVEMBER - 8 DECEMBER 1990


WATER-SURFACE ELEVATION*
AT STATION S16.0
8 - 28 DECEMBER 1990
WATER-SURFACE ELEVATION, FT
2
1
0
-1
-2
8
10
12
14
16
18
20
22
24
26
28
DECEMBER 1990
*MEAN WATER-SURFACE ELEVATION USED AS DATUM



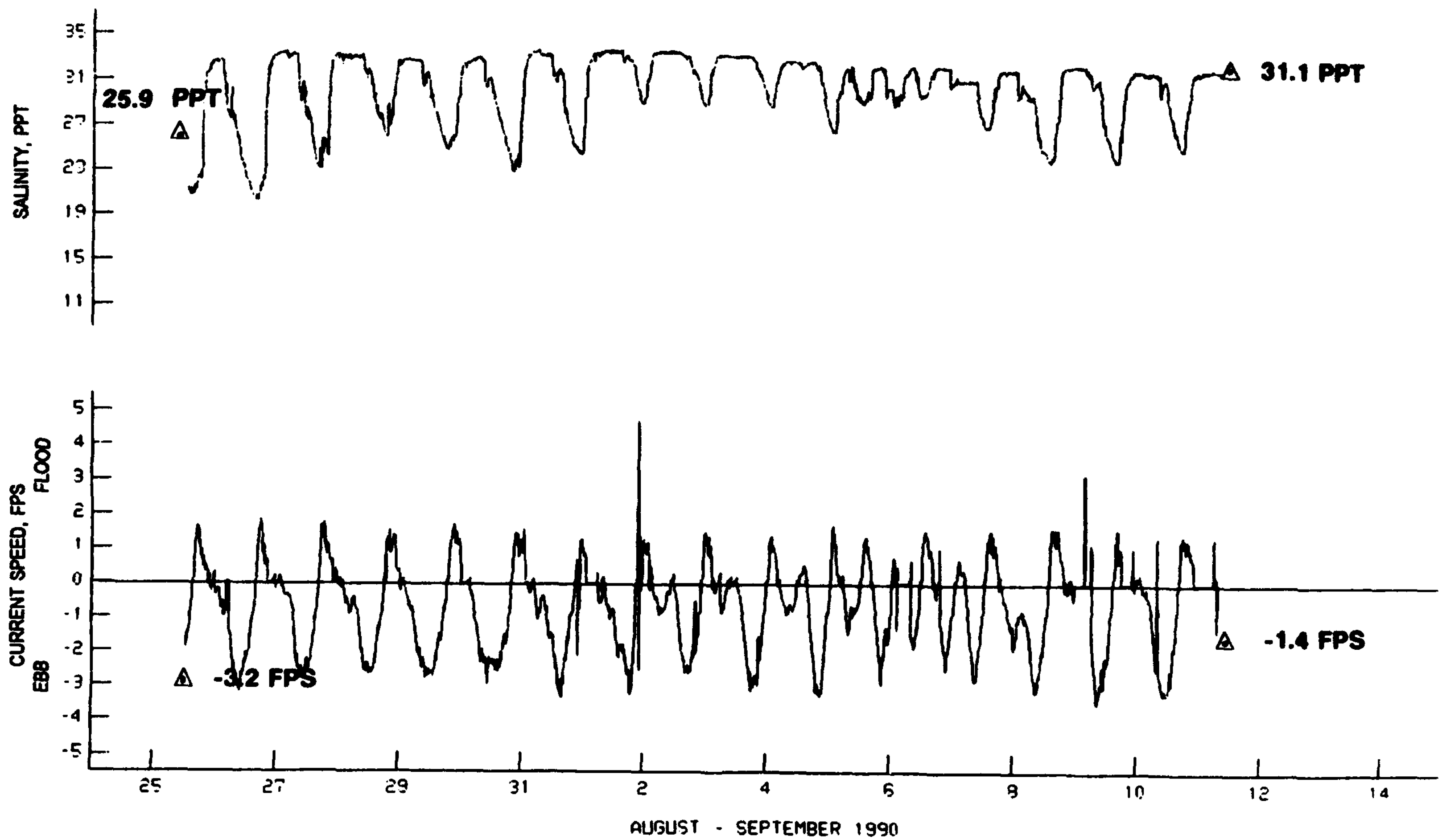
•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION•
AT STATION S16.0
28 DECEMBER 1990 - 10 JANUARY 1991



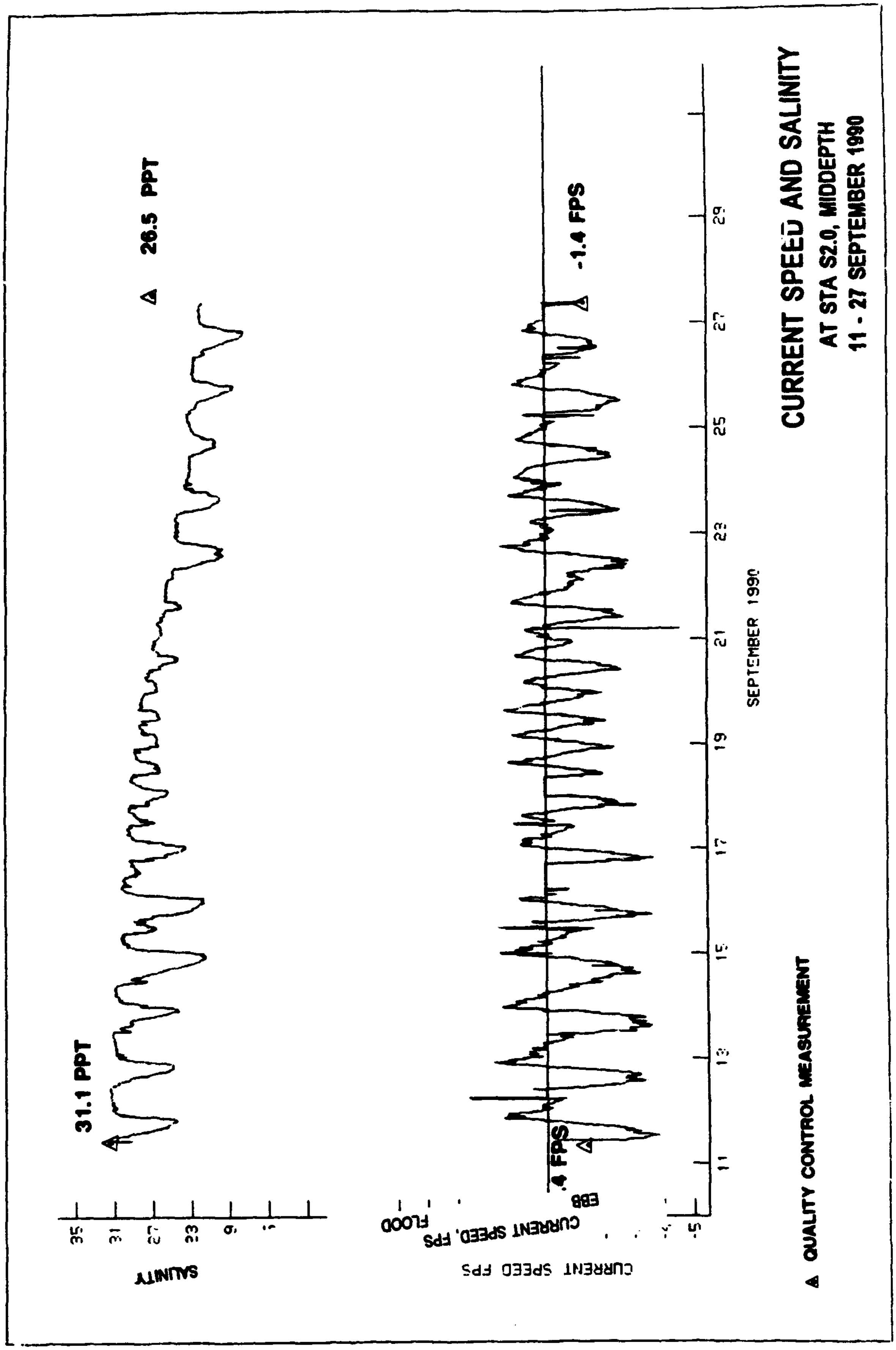
CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
22 JULY - 10 AUGUST 1990
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
25.8 PPT
27.8 PPT
0.6 FPS
JULY - AUGUST 1990
22
24
26
28
30
1
3
5
7
9
11
35
31
27
23
19
15
11
5
4
3
2
1
0
-1
-2
-3
-4
-5
QUALITY CONTROL MEASUREMENT

Plate 110

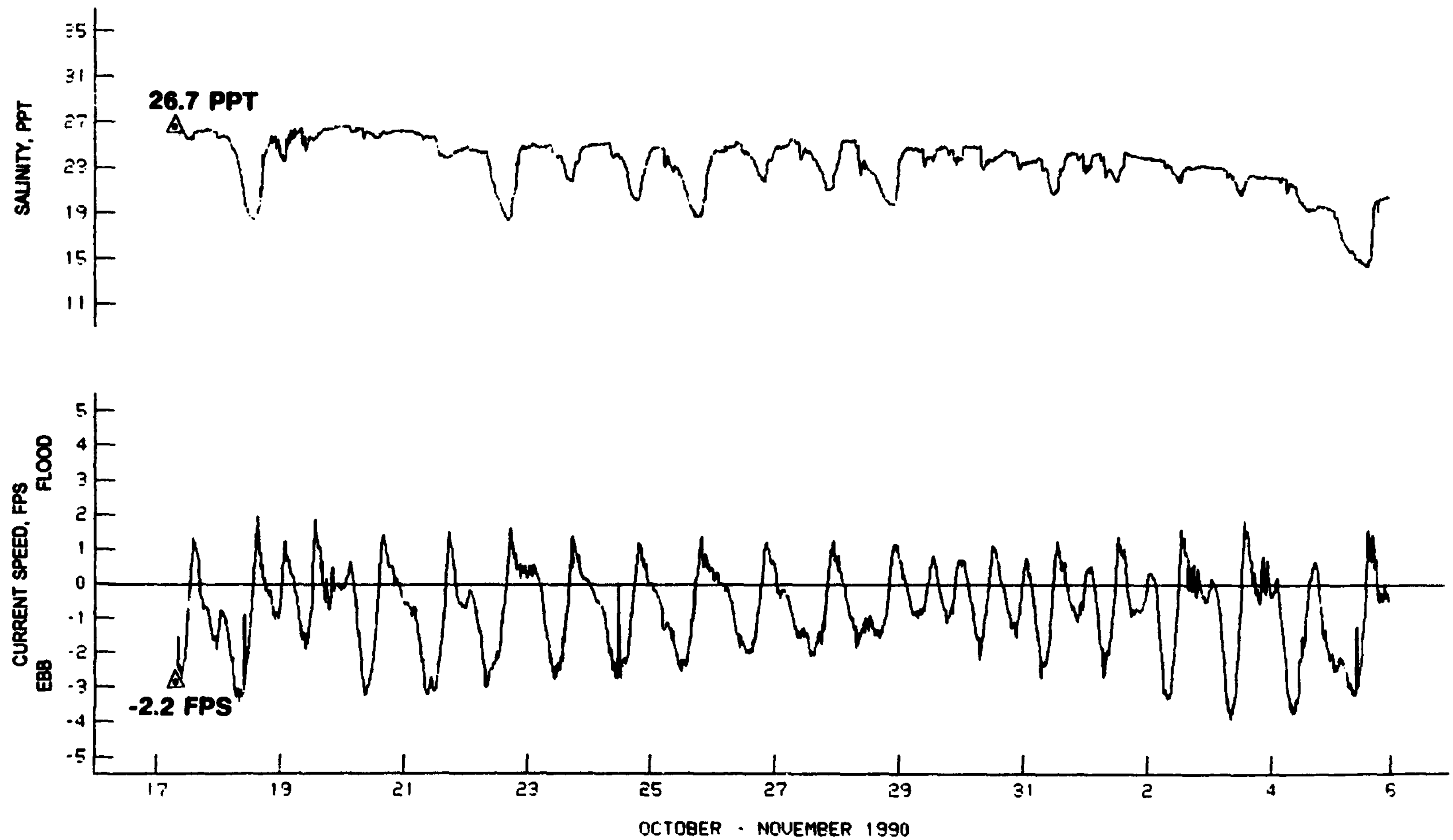


Δ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
25 AUGUST - 11 SEPTEMBER 1990



CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
11 - 27 SEPTEMBER 1990



Δ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
17 OCTOBER - 5 NOVEMBER 1990

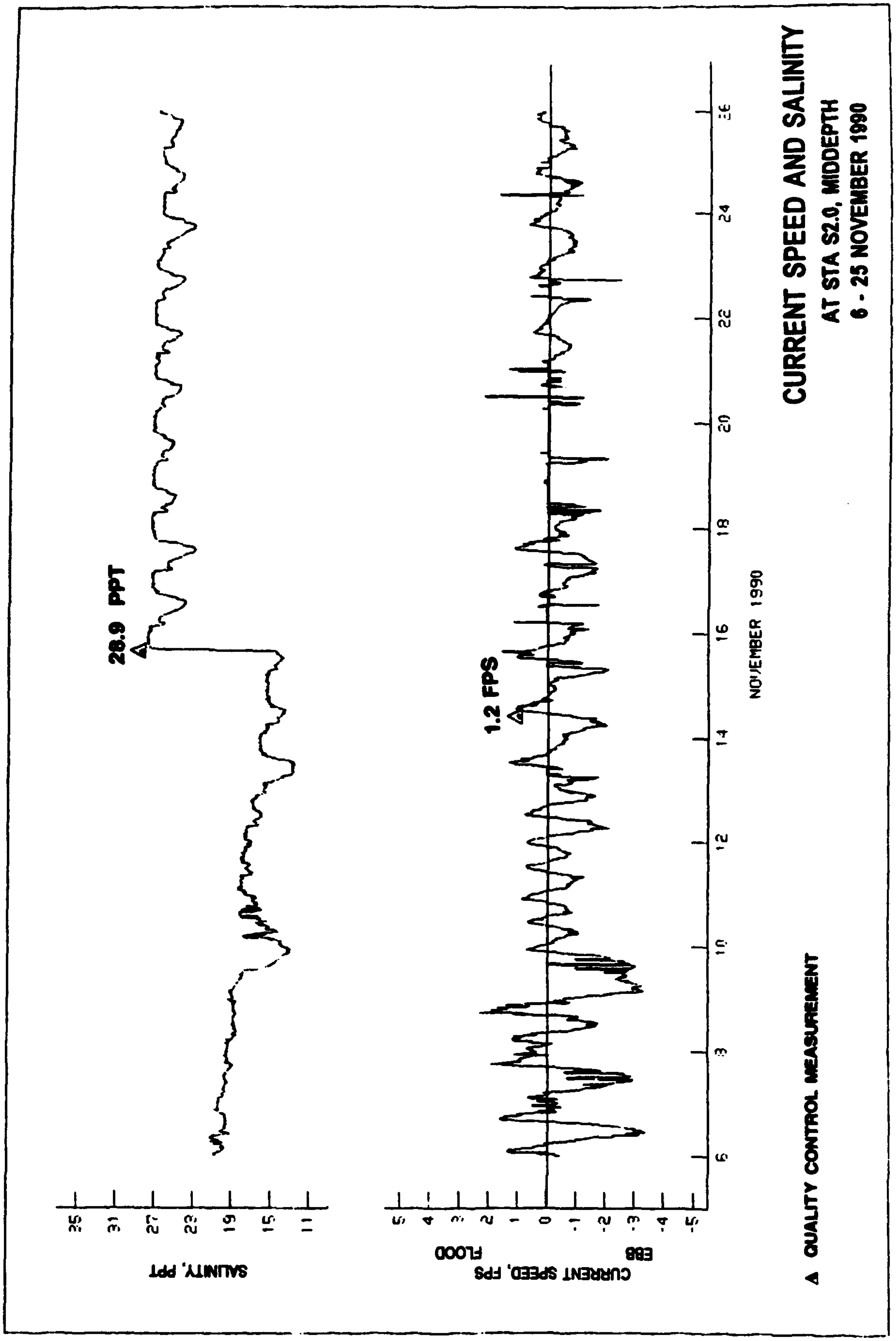
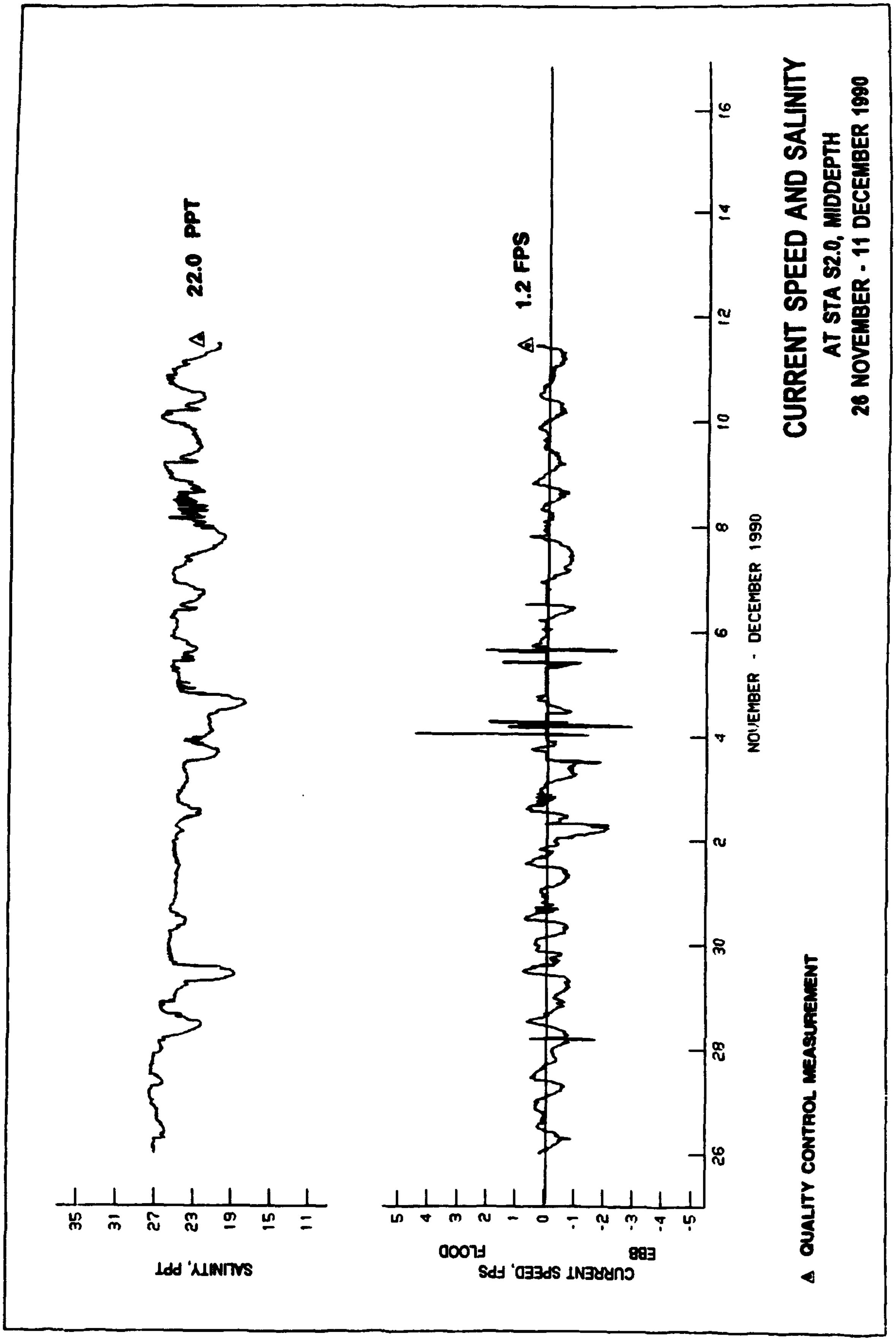
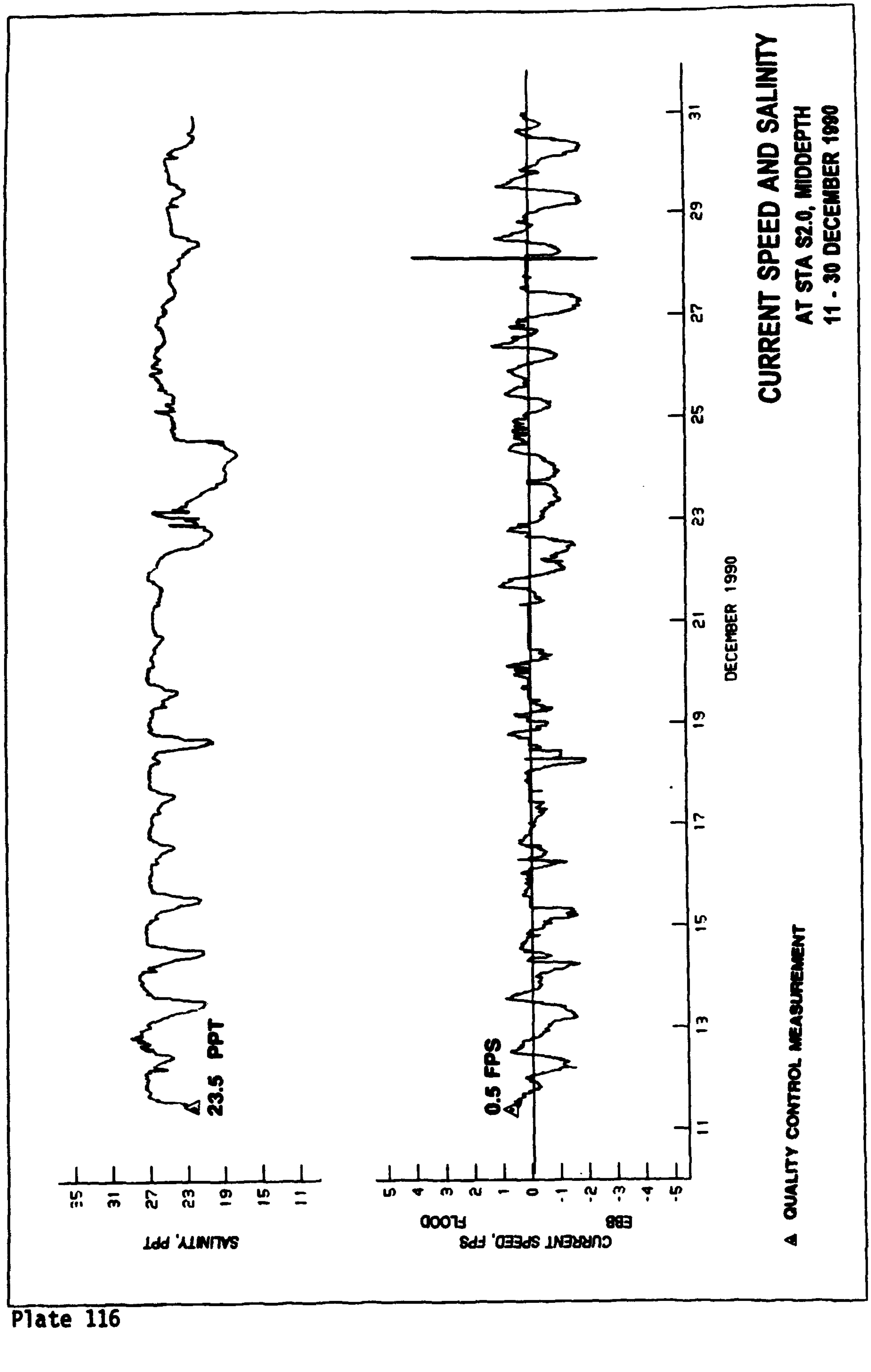

CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
6 - 25 NOVEMBER 1990
SALINITY, PPT
35
31
27
23
19
15
11
28.9 PPT
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
1.2 FPS
6
8
10
12
14
16
18
20
22
24
26
NOVEMBER 1990
Δ QUALITY CONTROL MEASUREMENT

Plate 114

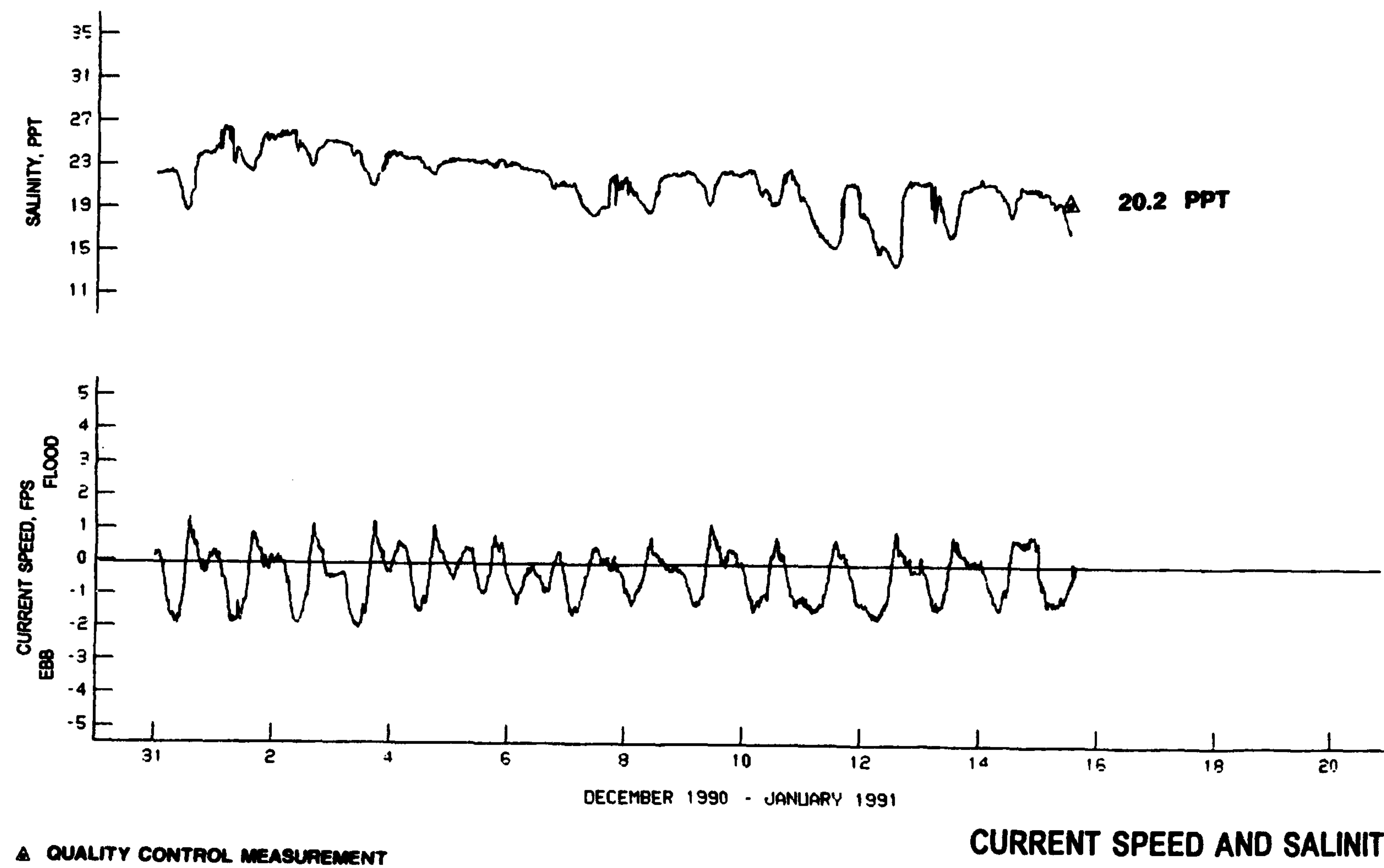


CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
26 NOVEMBER - 11 DECEMBER 1990
SALINITY, PPT
35
31
27
23
19
15
11
22.0 PPT
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
1.2 FPS
26
28
30
2
4
6
8
10
12
14
16
NOVEMBER - DECEMBER 1990
QUALITY CONTROL MEASUREMENT

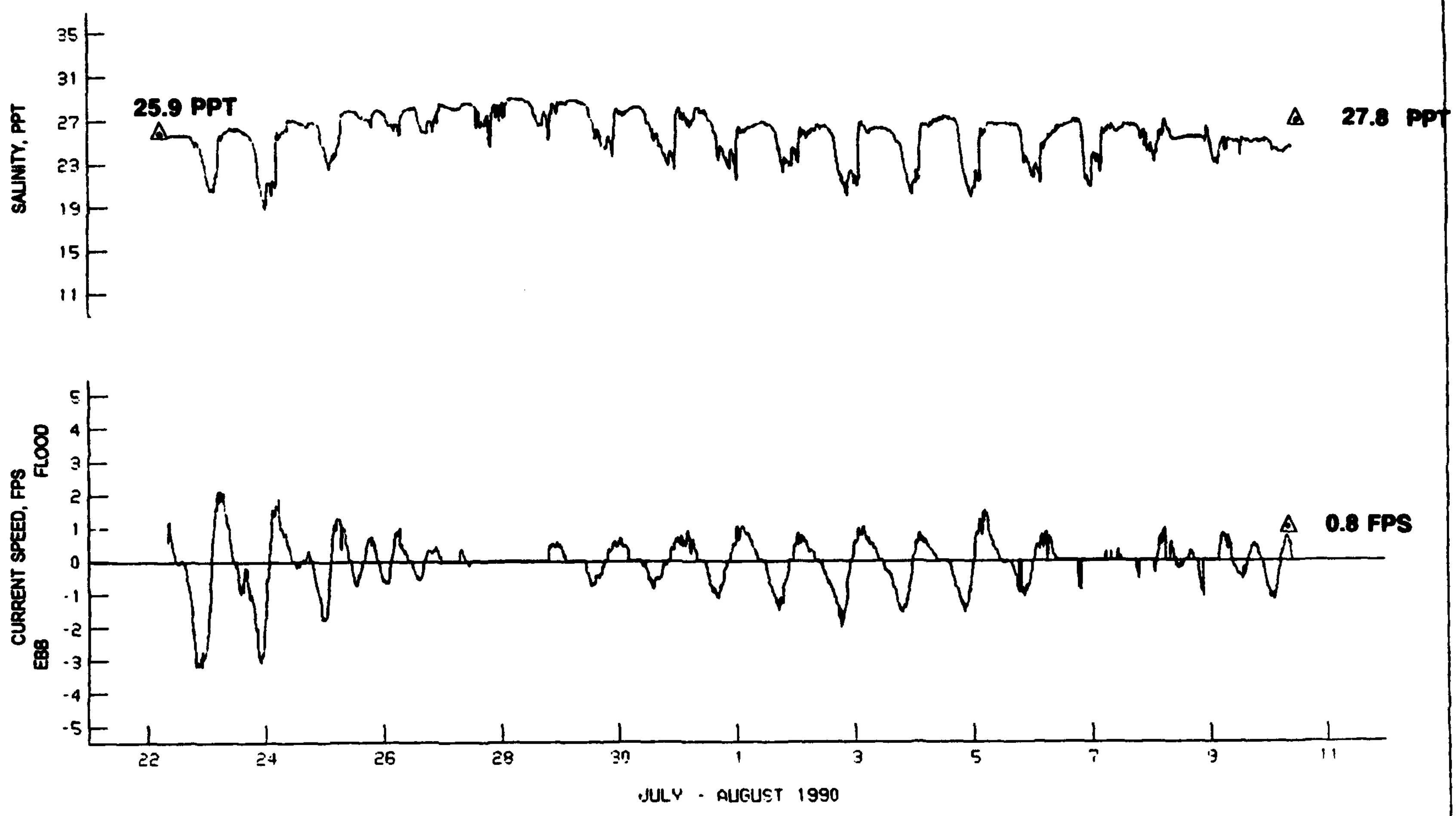


CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
11 - 30 DECEMBER 1990
SALINITY, PPT
35
31
27
23
19
15
11
23.5 PPT
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
0.5 FPS
11
13
15
17
19
21
23
25
27
29
31
DECEMBER 1990
Δ QUALITY CONTROL MEASUREMENT

Plate 116

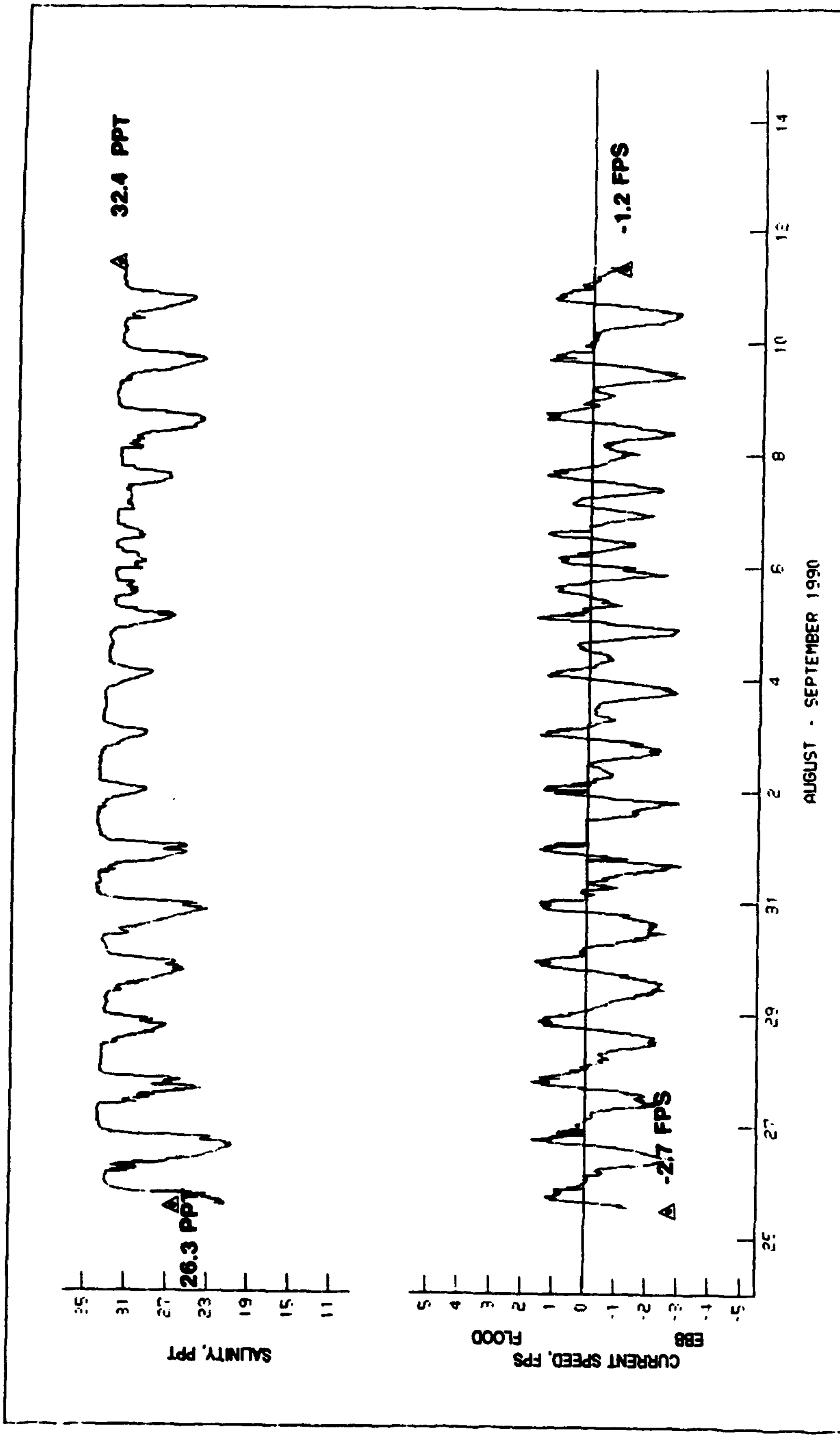


CURRENT SPEED AND SALINITY
AT STA S2.0, MIDDEPTH
31 DECEMBER 1990 - 15 JANUARY 1991



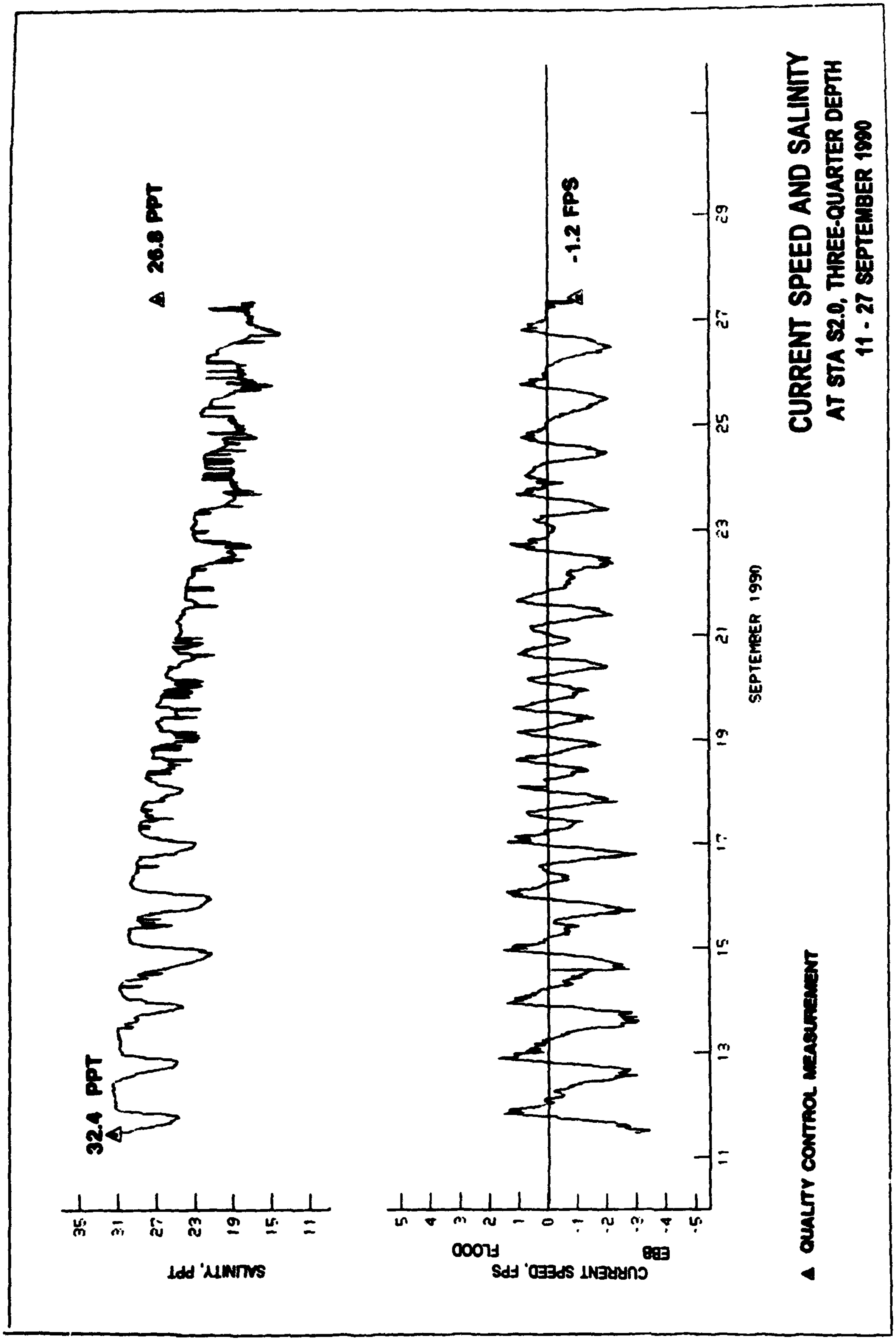
△ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990

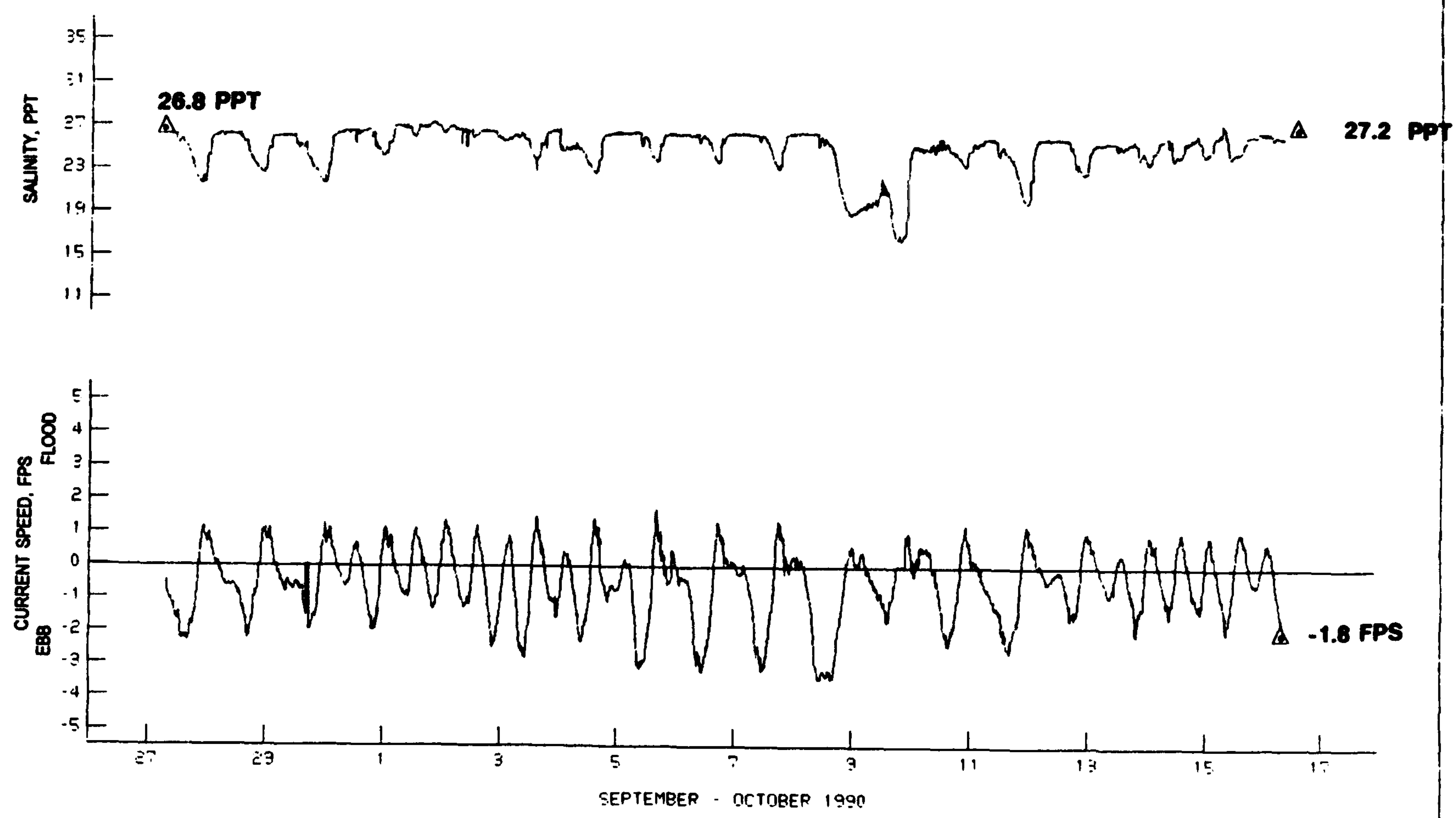


▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
25 AUGUST - 11 SEPTEMBER 1990

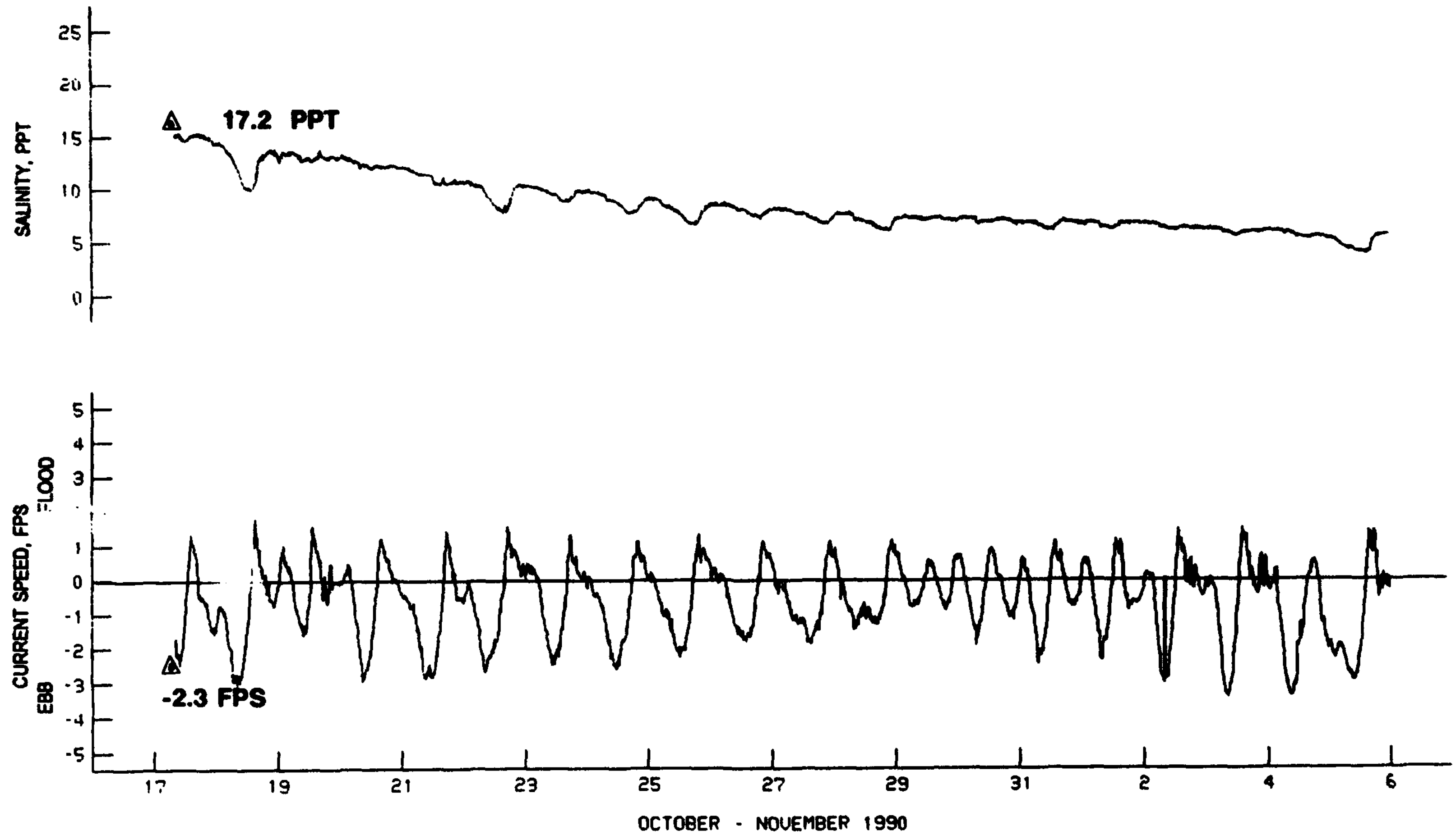


CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
11 - 27 SEPTEMBER 1990



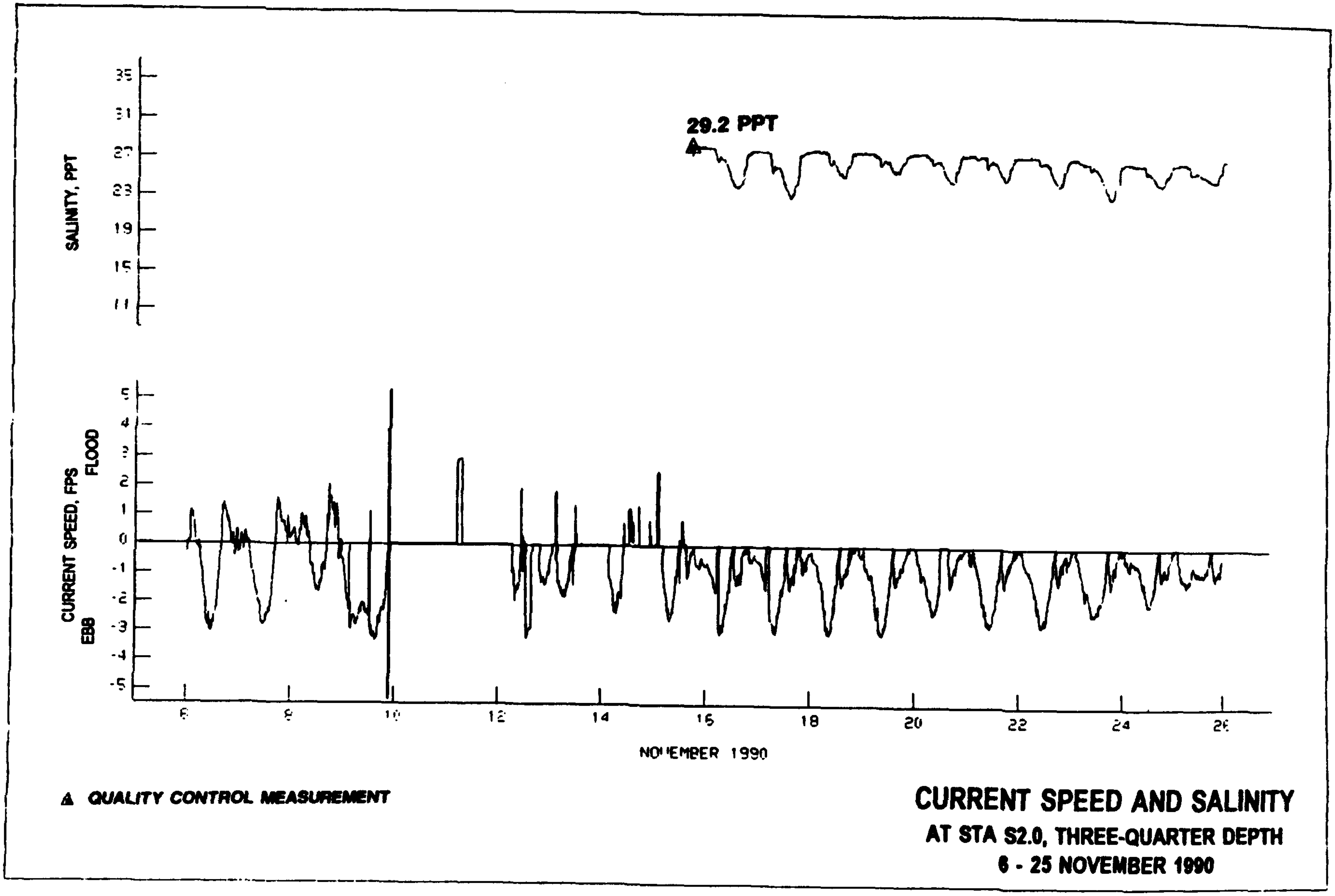
▲ QUALITY CONTROL MEASUREMENT

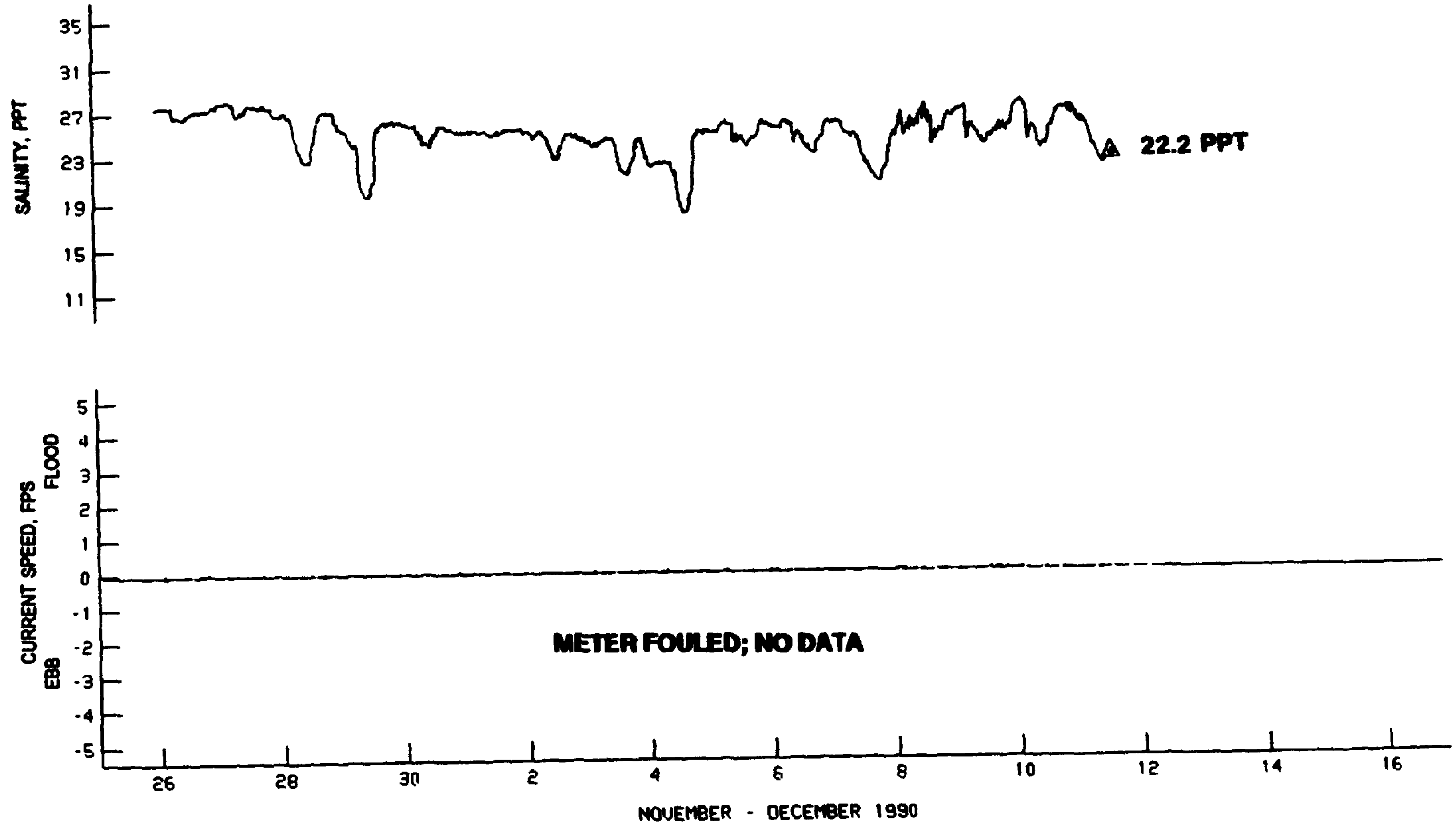
CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
27 SEPTEMBER - 17 OCTOBER 1990



▲ QUALITY CONTROL MEASUREMENT

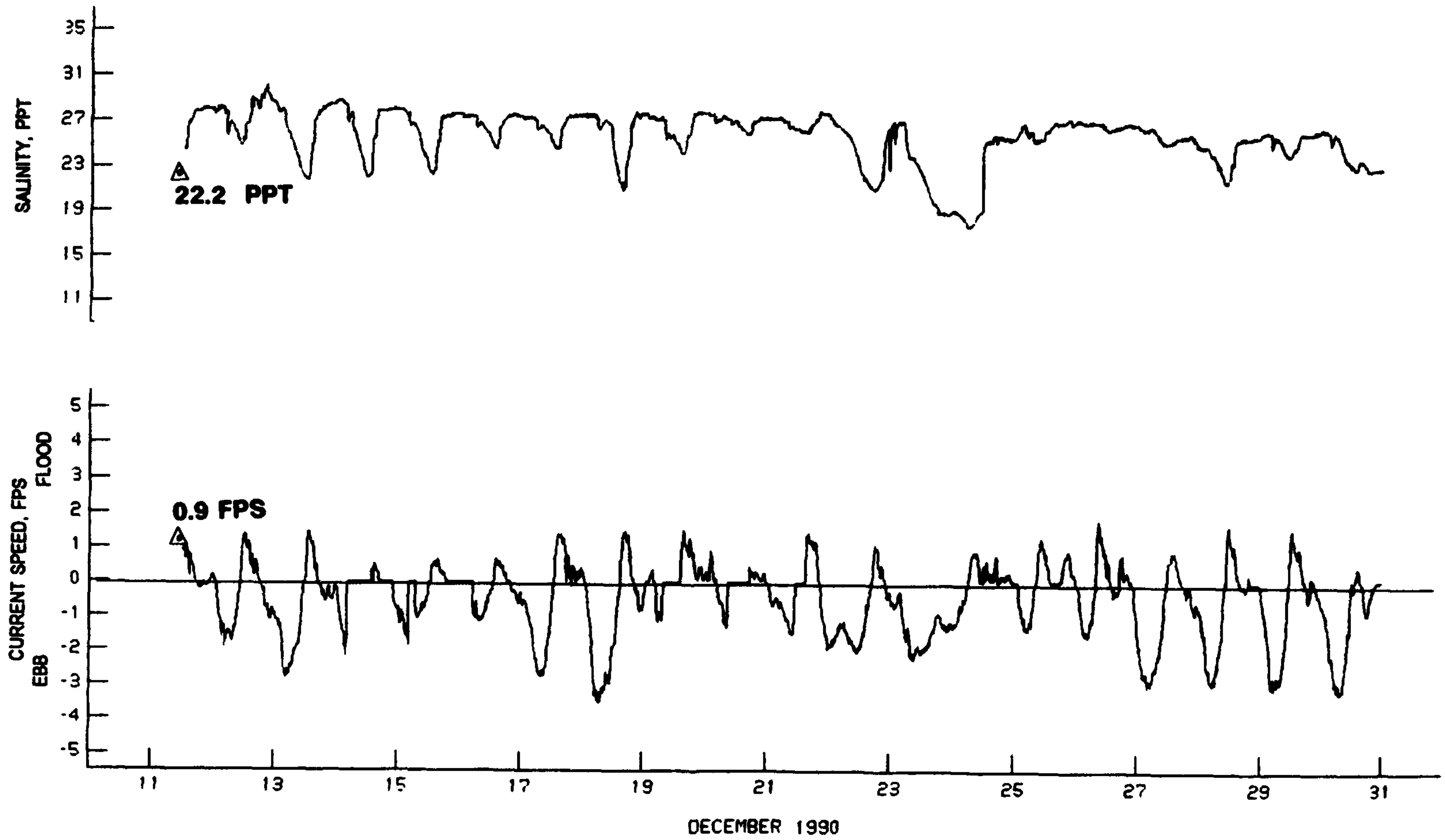
CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
17 OCTOBER - 5 NOVEMBER 1990


SALINITY, PPT
35
31
27
23
19
15
11
29.2 PPT
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
6
8
10
12
14
16
18
20
22
24
26
NOVEMBER 1990
▲ QUALITY CONTROL MEASUREMENT
CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
6 - 25 NOVEMBER 1990



▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
26 NOVEMBER - 11 DECEMBER 1990



▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
11 - 30 DECEMBER 1990

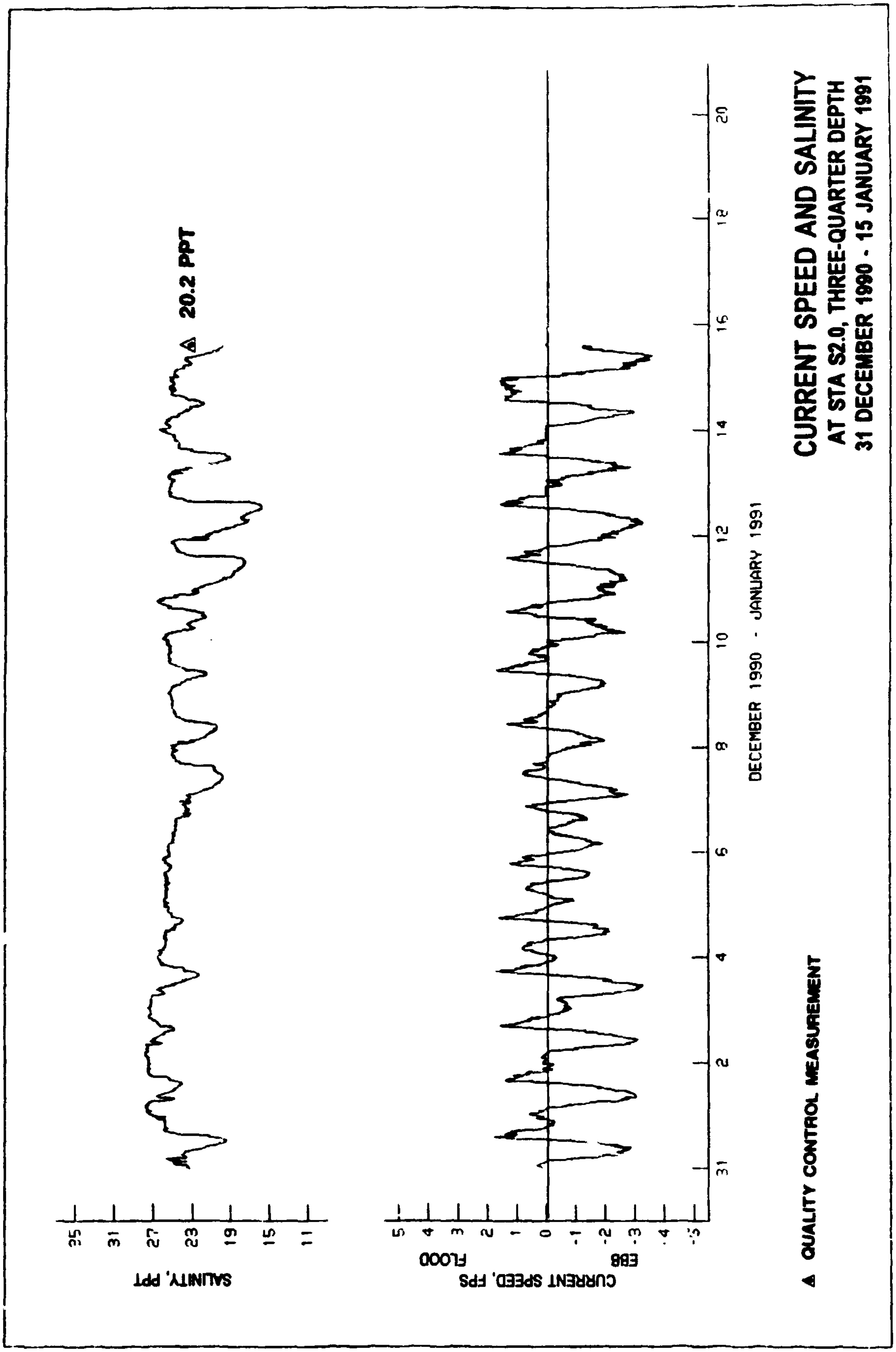
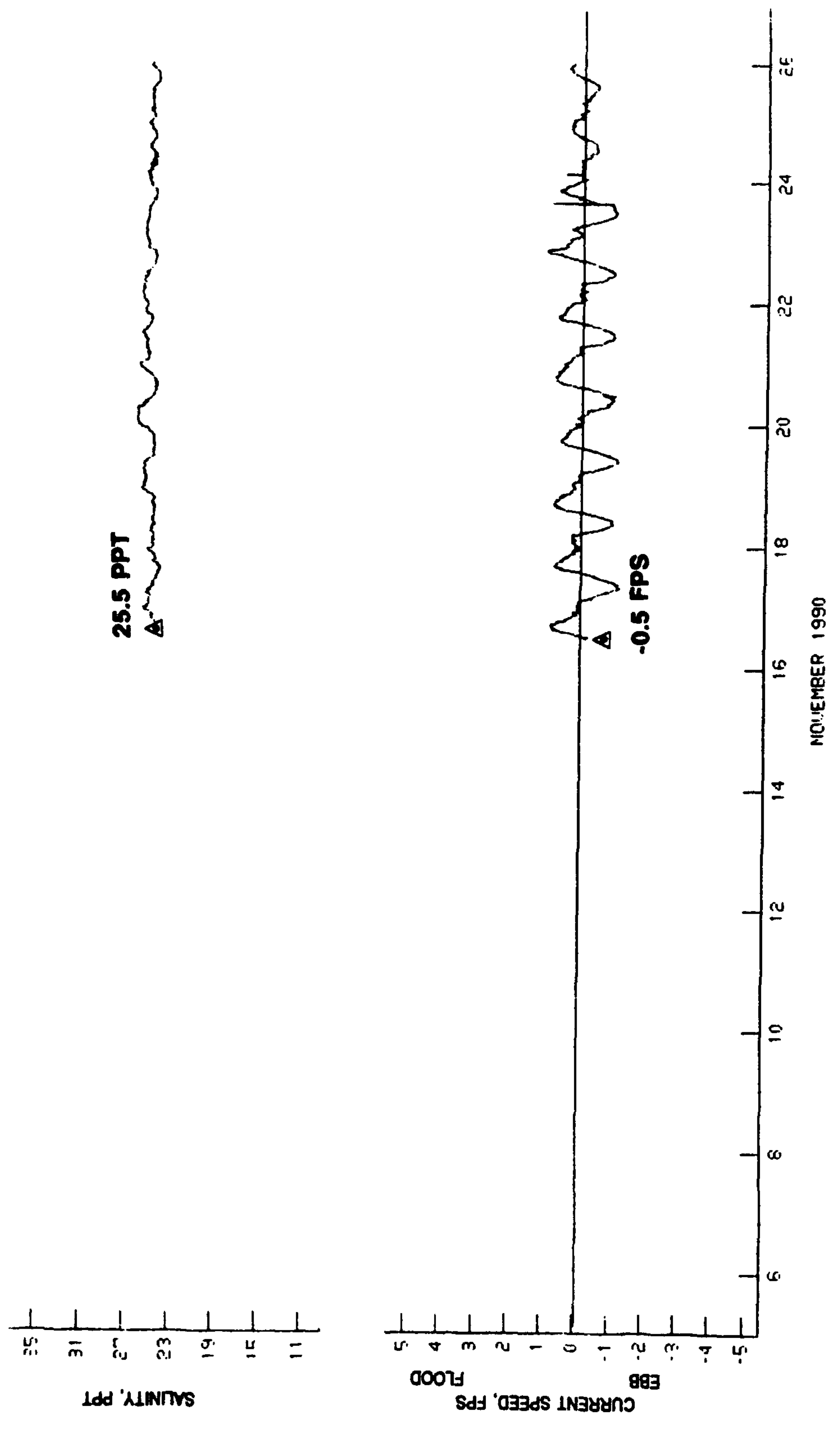

CURRENT SPEED AND SALINITY
AT STA S2.0, THREE-QUARTER DEPTH
31 DECEMBER 1990 - 15 JANUARY 1991
SALINITY, PPT
35 31 27 23 19 15 11
20.2 PPT
CURRENT SPEED, FPS
FLOOD
EBB
5 4 3 2 1 0 -1 -2 -3 -4 -5
31 2 4 6 8 10 12 14 16 18 20
DECEMBER 1990 - JANUARY 1991
QUALITY CONTROL MEASUREMENT

Plate 126



CURRENT SPEED AND SALINITY
AT STA S5.5, THREE-QUARTER DEPTH
16 - 26 NOVEMBER 1990

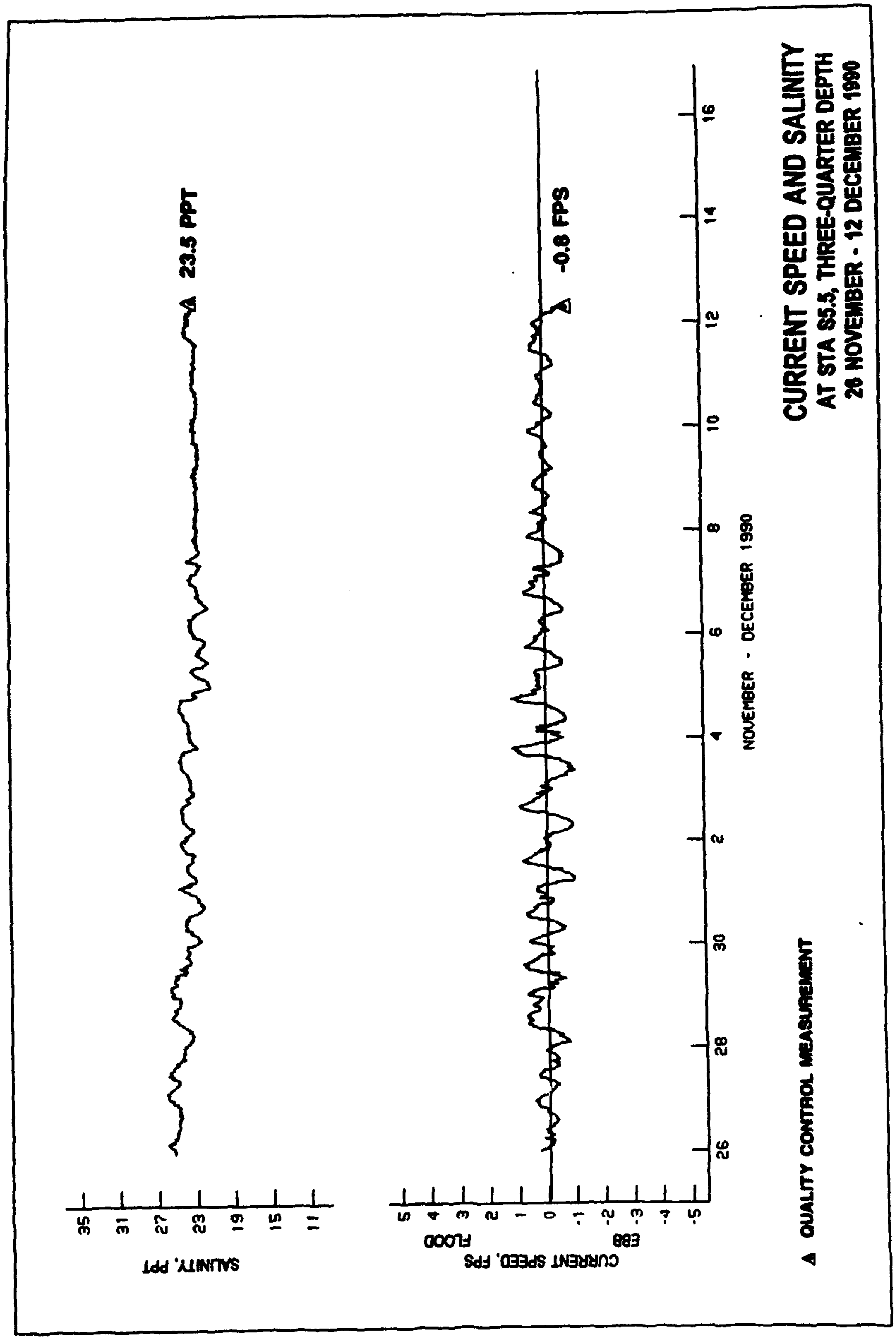
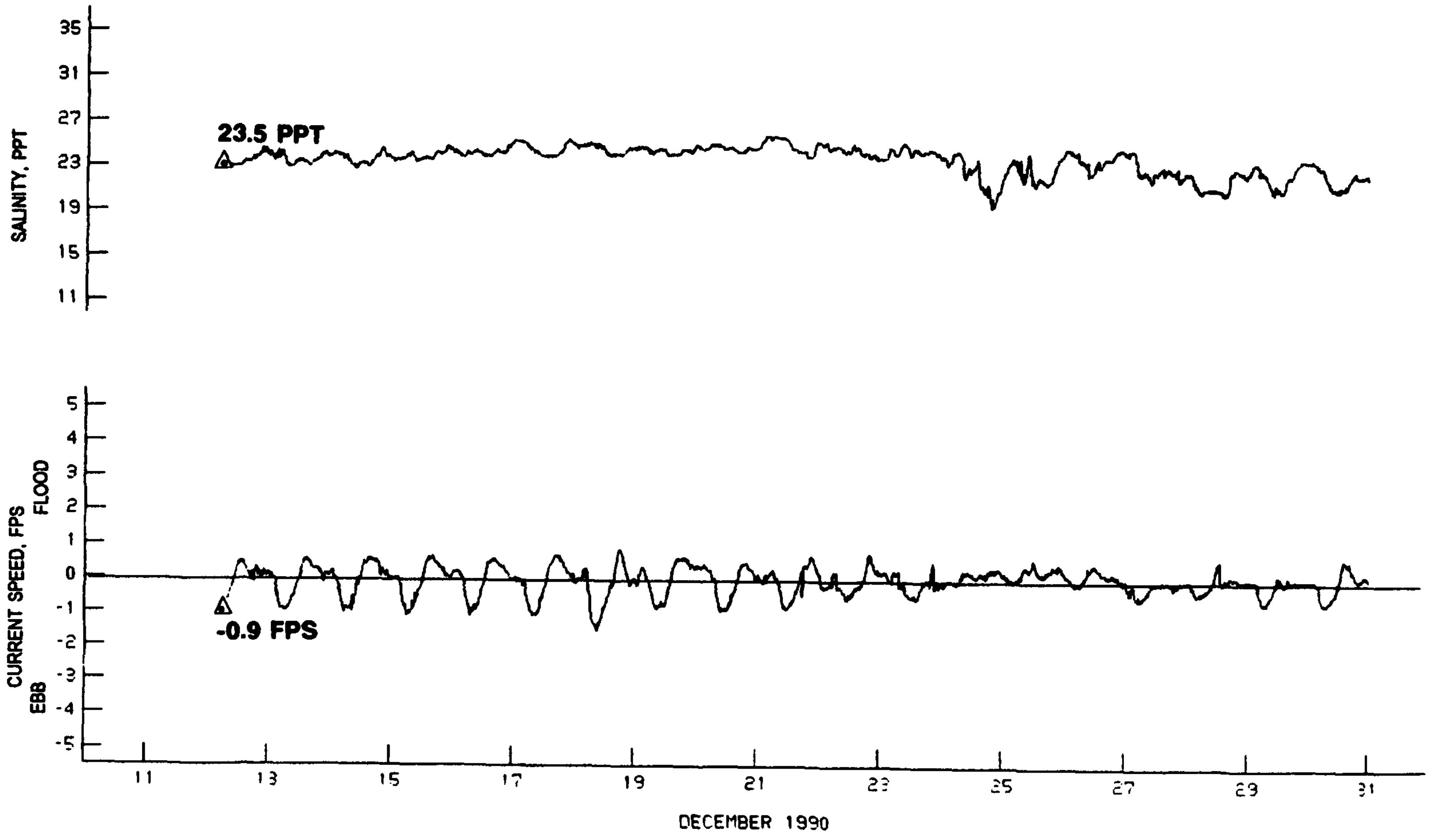
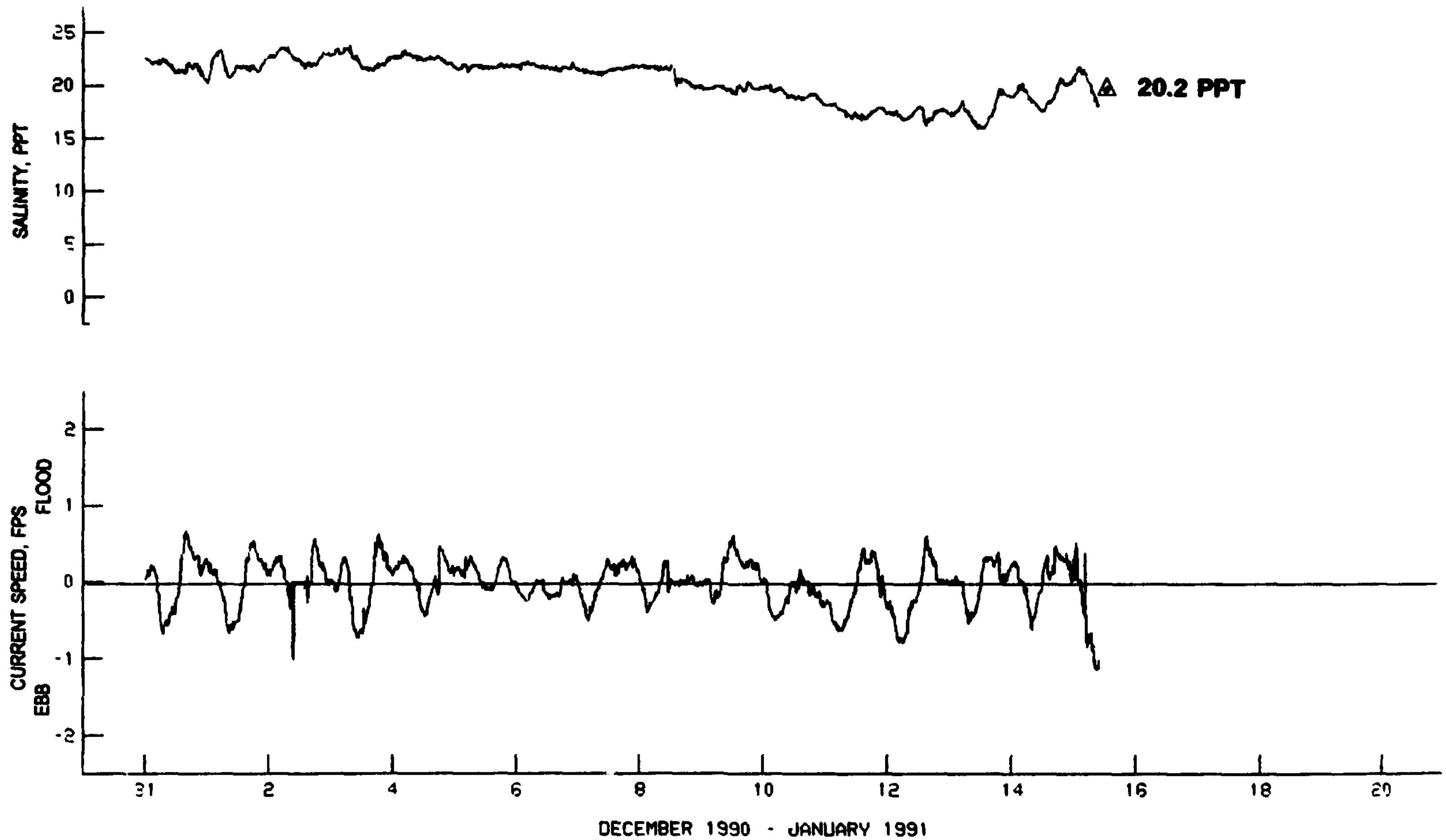

CURRENT SPEED AND SALINITY
AT STA S5.5, THREE-QUARTER DEPTH
26 NOVEMBER - 12 DECEMBER 1990
23.5 PPT
-0.8 FPS
SALINITY, PPT
35
31
27
23
19
15
11
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
26
28
30
2
4
6
8
10
12
14
16
NOVEMBER - DECEMBER 1990
QUALITY CONTROL MEASUREMENT

Plate 128



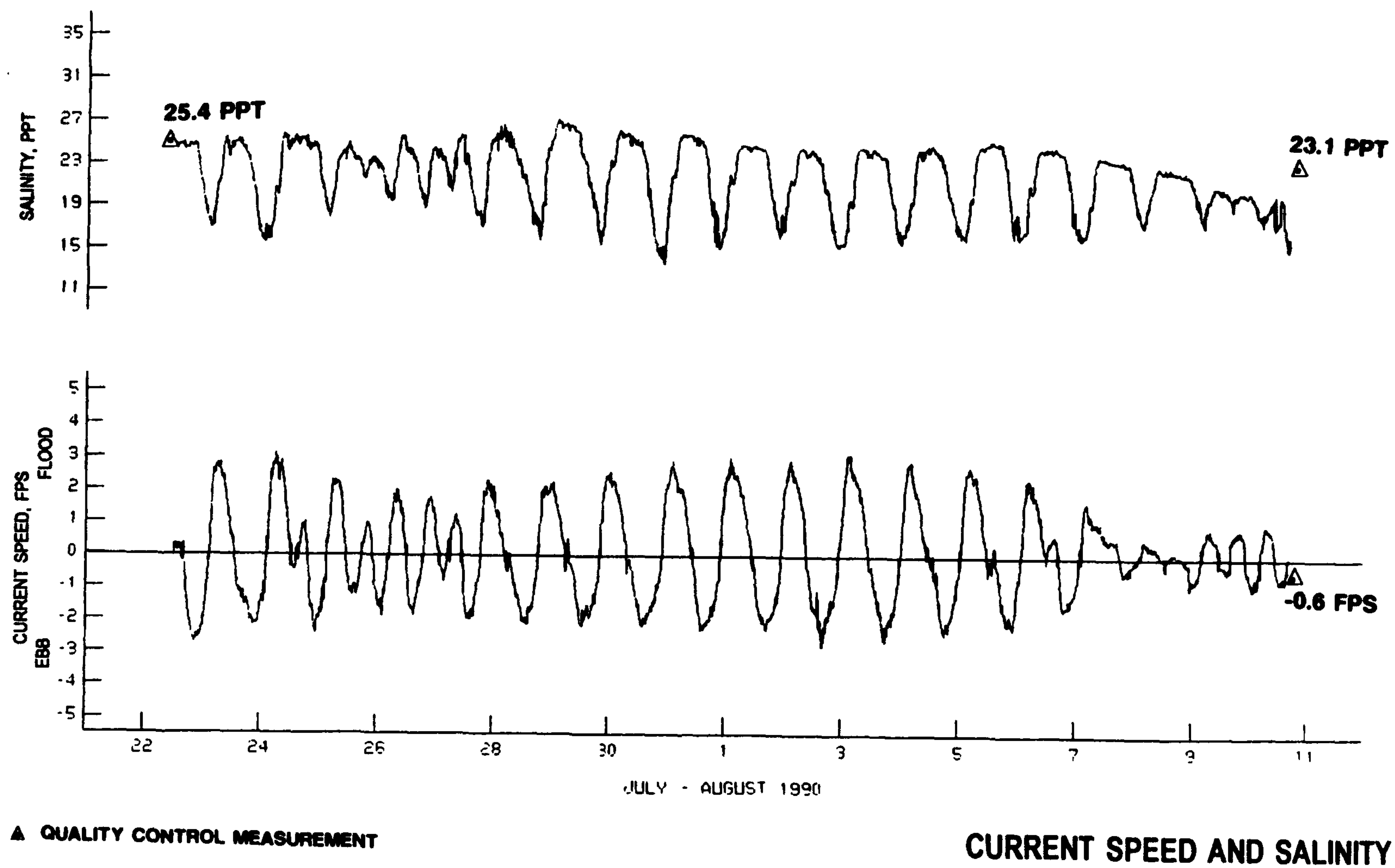
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S5.5, THREE-QUARTER DEPTH
12 - 30 DECEMBER 1990



▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S5.5, THREE-QUARTER DEPTH
31 DECEMBER 1990 - 15 JANUARY 1991



CURRENT SPEED AND SALINITY
AT STA S6.0, MIDDEPTH
22 JULY - 10 AUGUST 1990

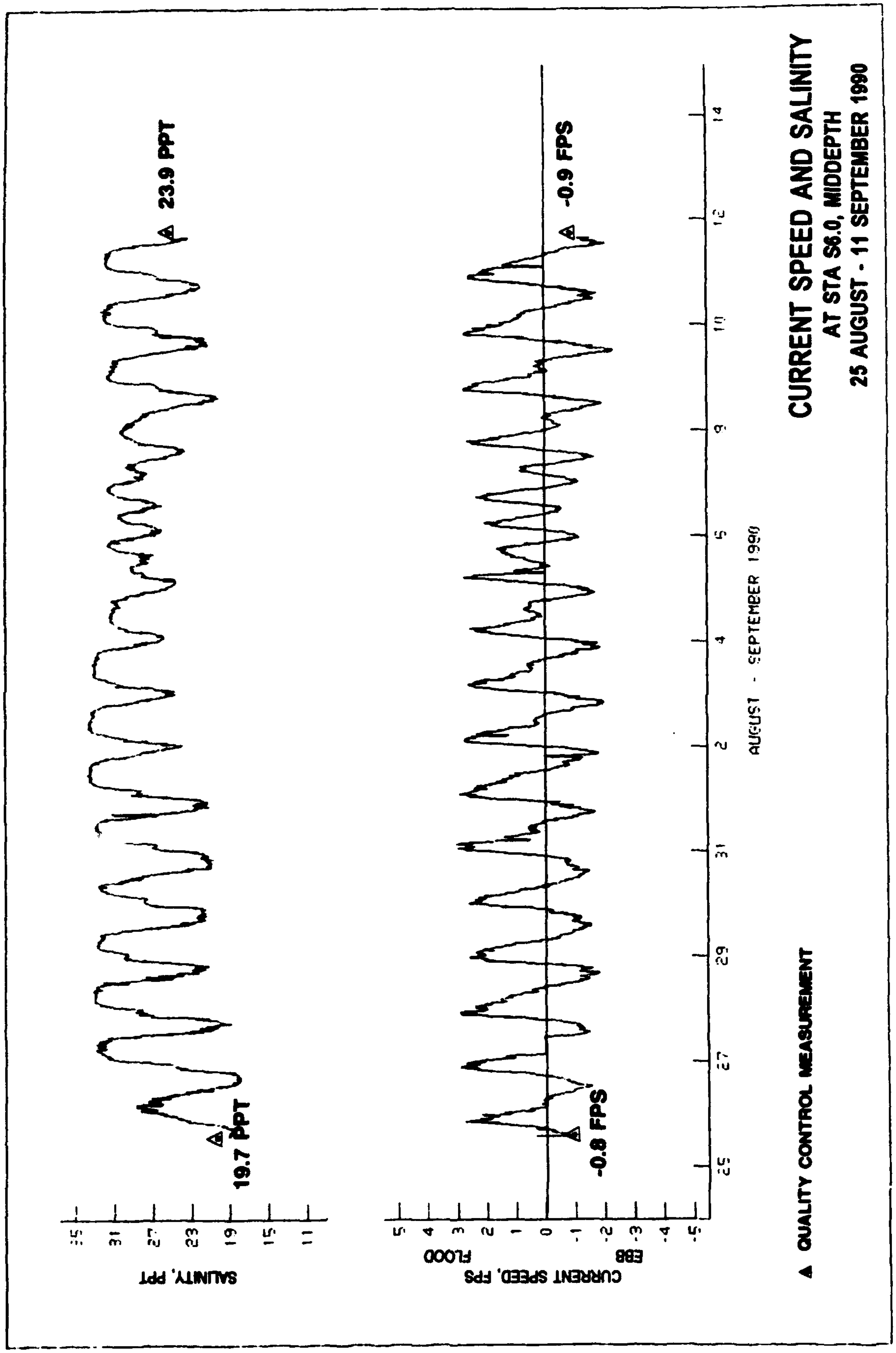
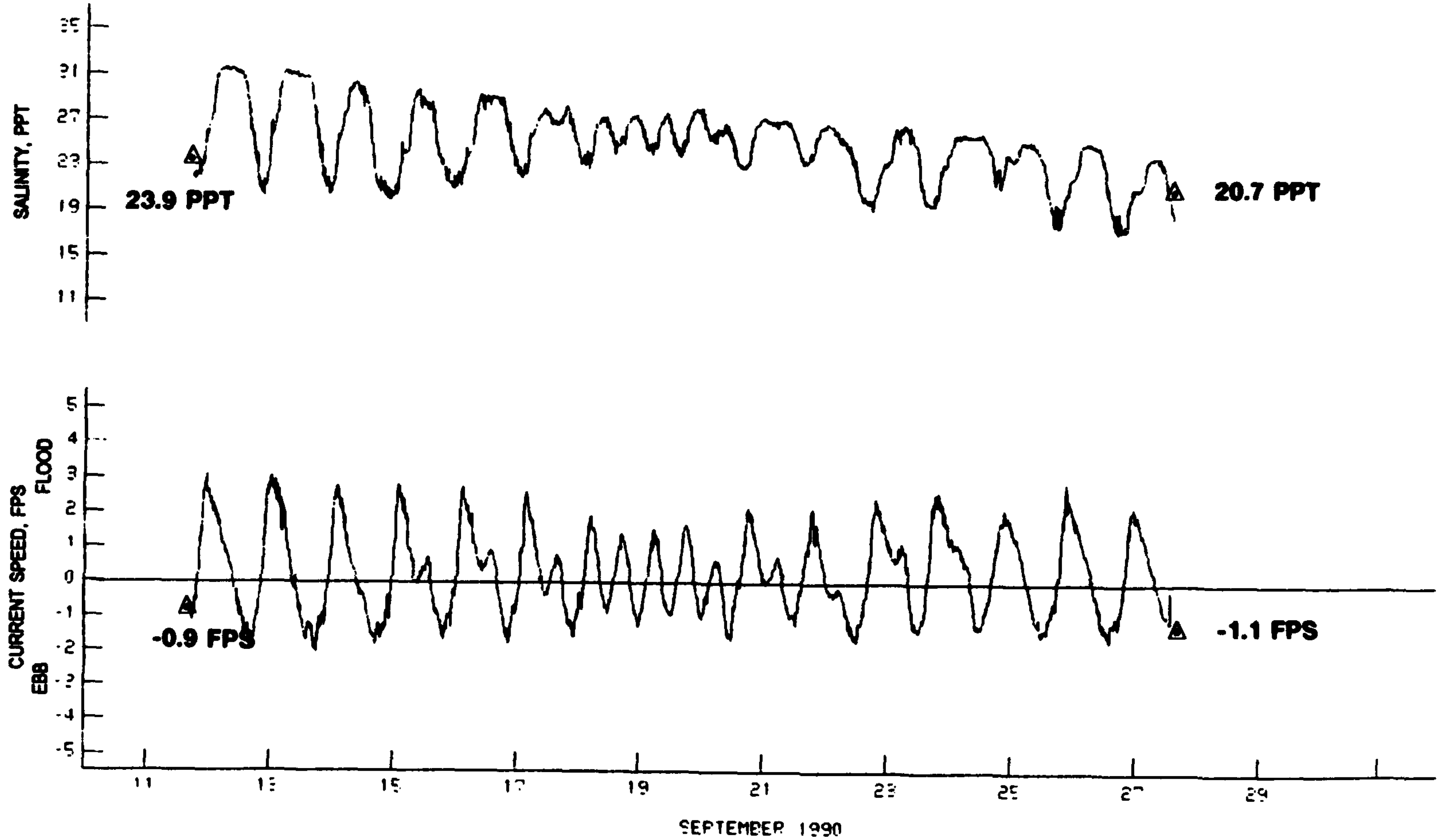
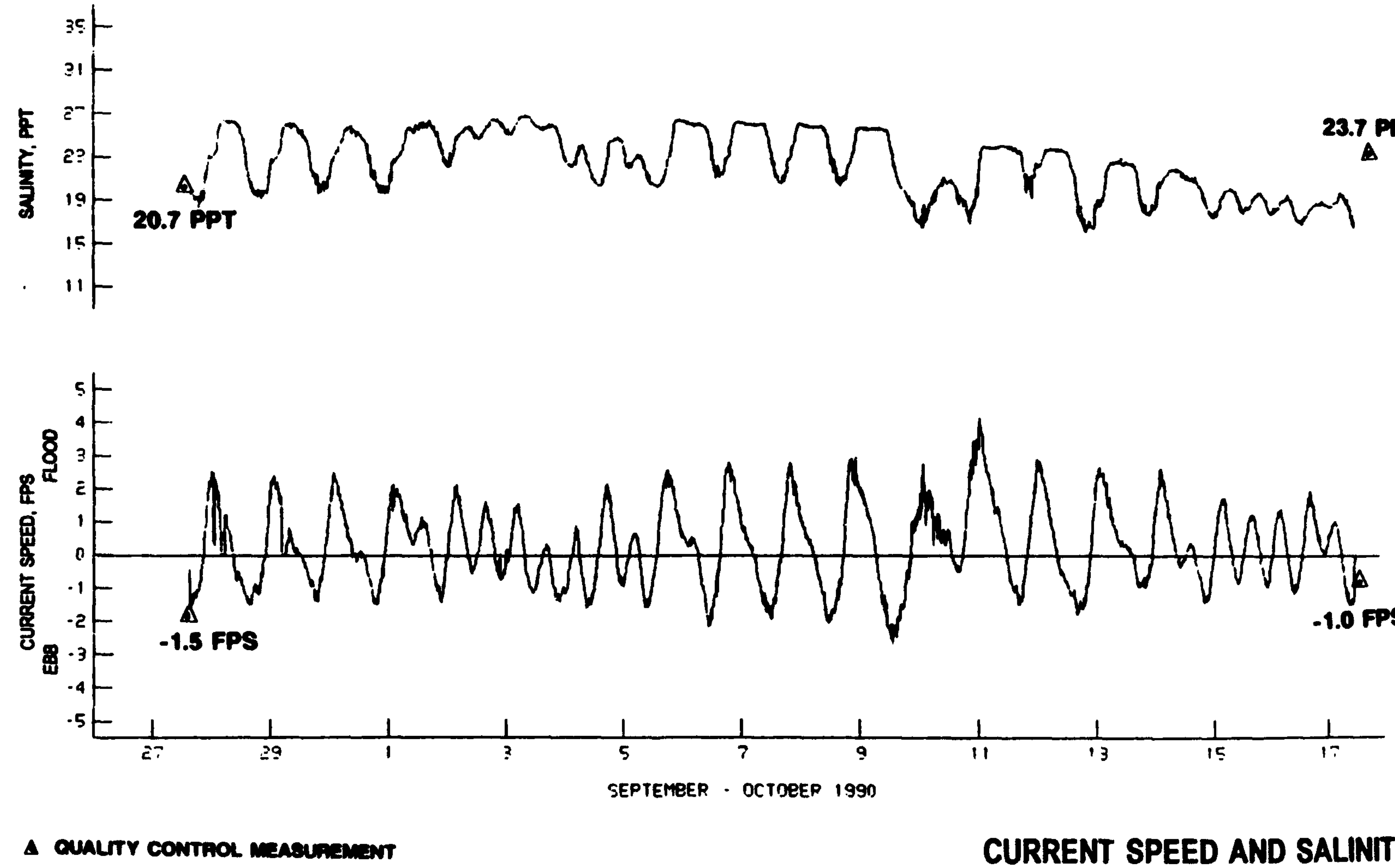

CURRENT SPEED AND SALINITY
AT STA S6.0, MIDDEPTH
25 AUGUST - 11 SEPTEMBER 1990
SALINITY, PPT
35
31
27
23
19
15
11
23.9 PPT
19.7 PPT
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
-0.9 FPS
-0.8 FPS
25
27
29
31
2
4
6
8
10
12
14
AUGUST - SEPTEMBER 1990
▲ QUALITY CONTROL MEASUREMENT

Plate 132



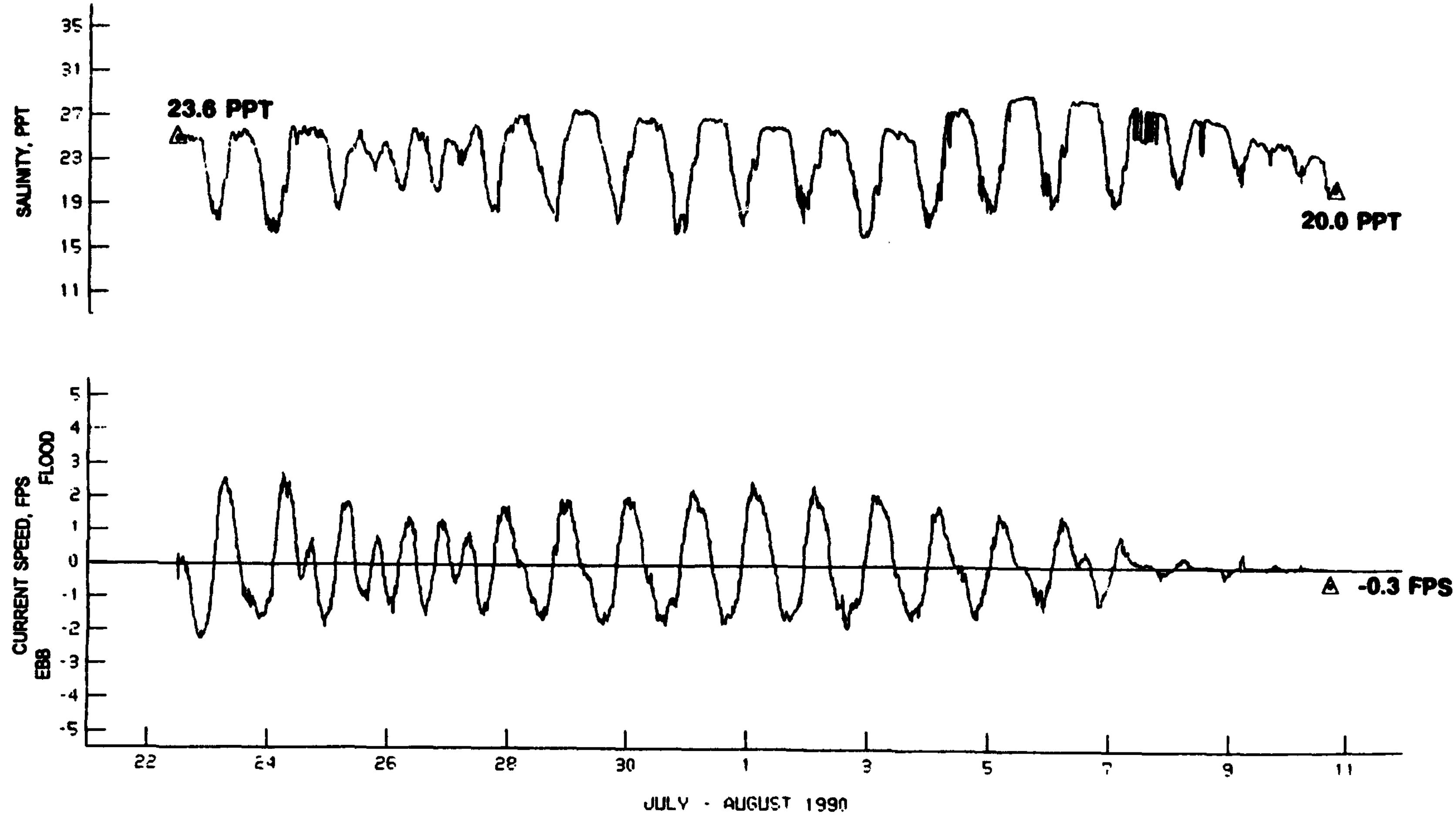
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S6.0, MIDDEPTH
11 - 27 SEPTEMBER 1990



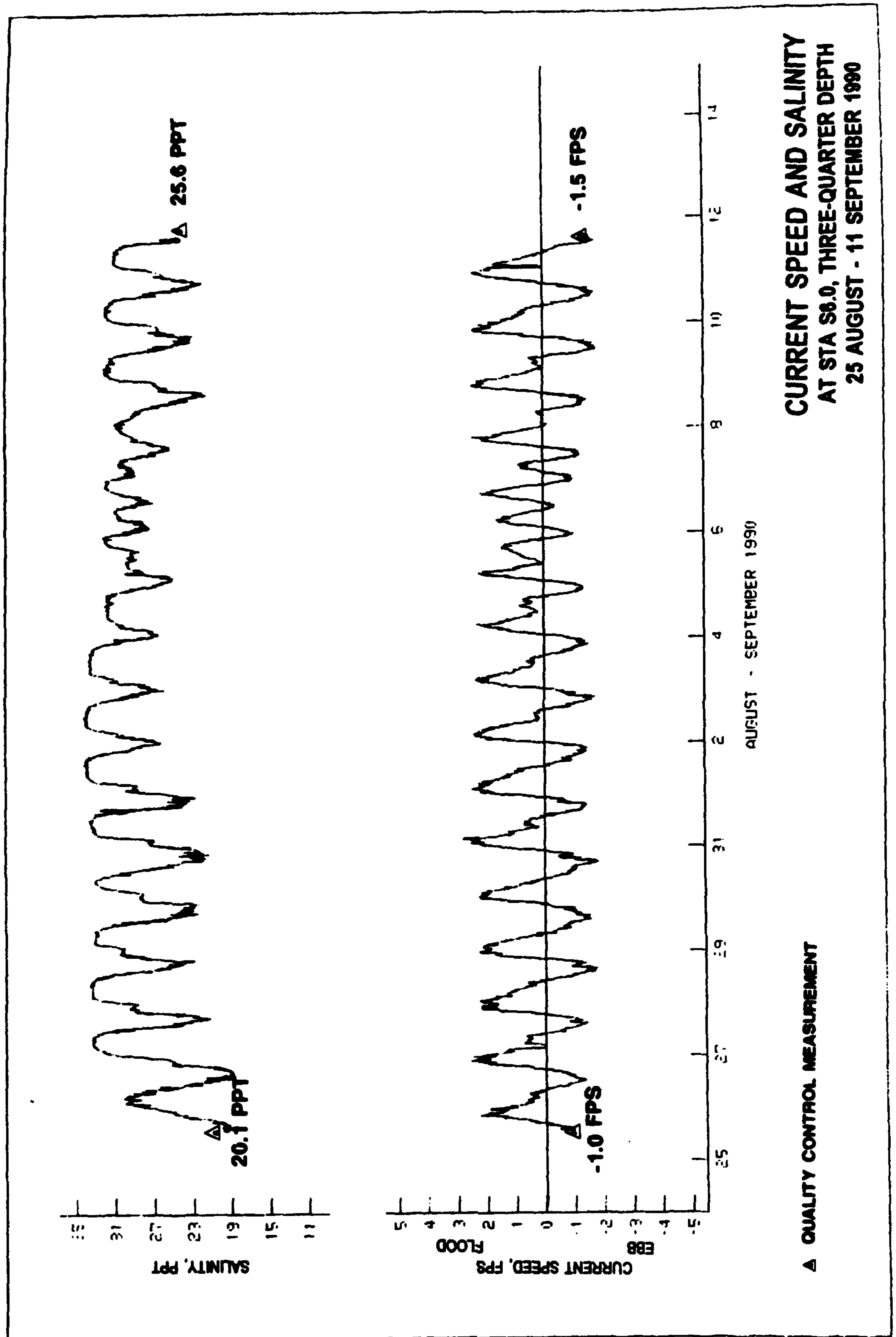
CURRENT SPEED AND SALINITY
AT STA S8.0, MIDDEPTH
27 SEPTEMBER - 17 OCTOBER 1990

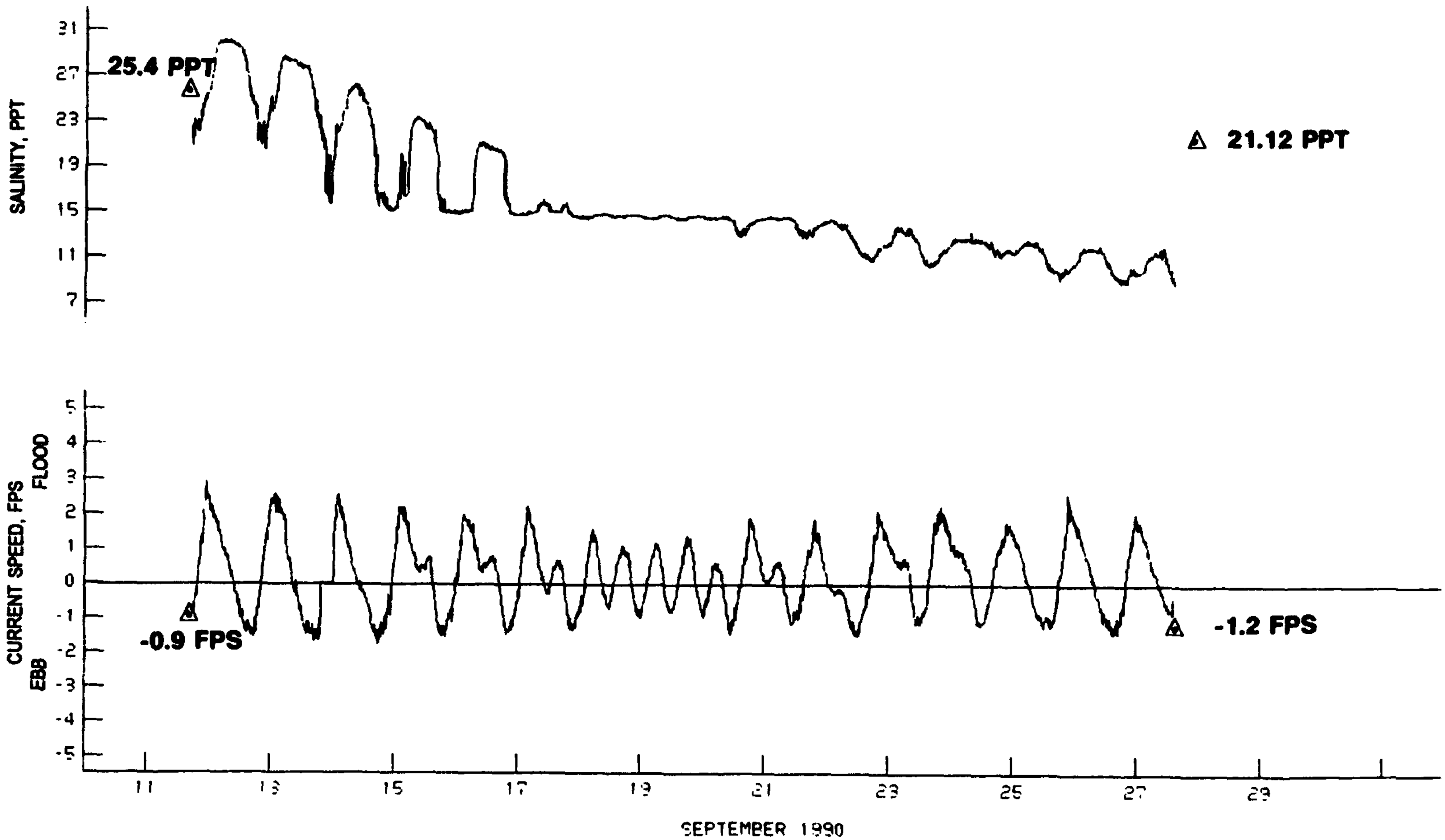
Plate 134



▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S8.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990


CURRENT SPEED AND SALINITY
AT STA S8.0, THREE-QUARTER DEPTH
25 AUGUST - 11 SEPTEMBER 1990
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
AUGUST - SEPTEMBER 1990
20.1 PPT
25.6 PPT
-1.0 FPS
-1.5 FPS
▲ QUALITY CONTROL MEASUREMENT



▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S6.0, THREE-QUARTER DEPTH
11 - 27 SEPTEMBER 1990

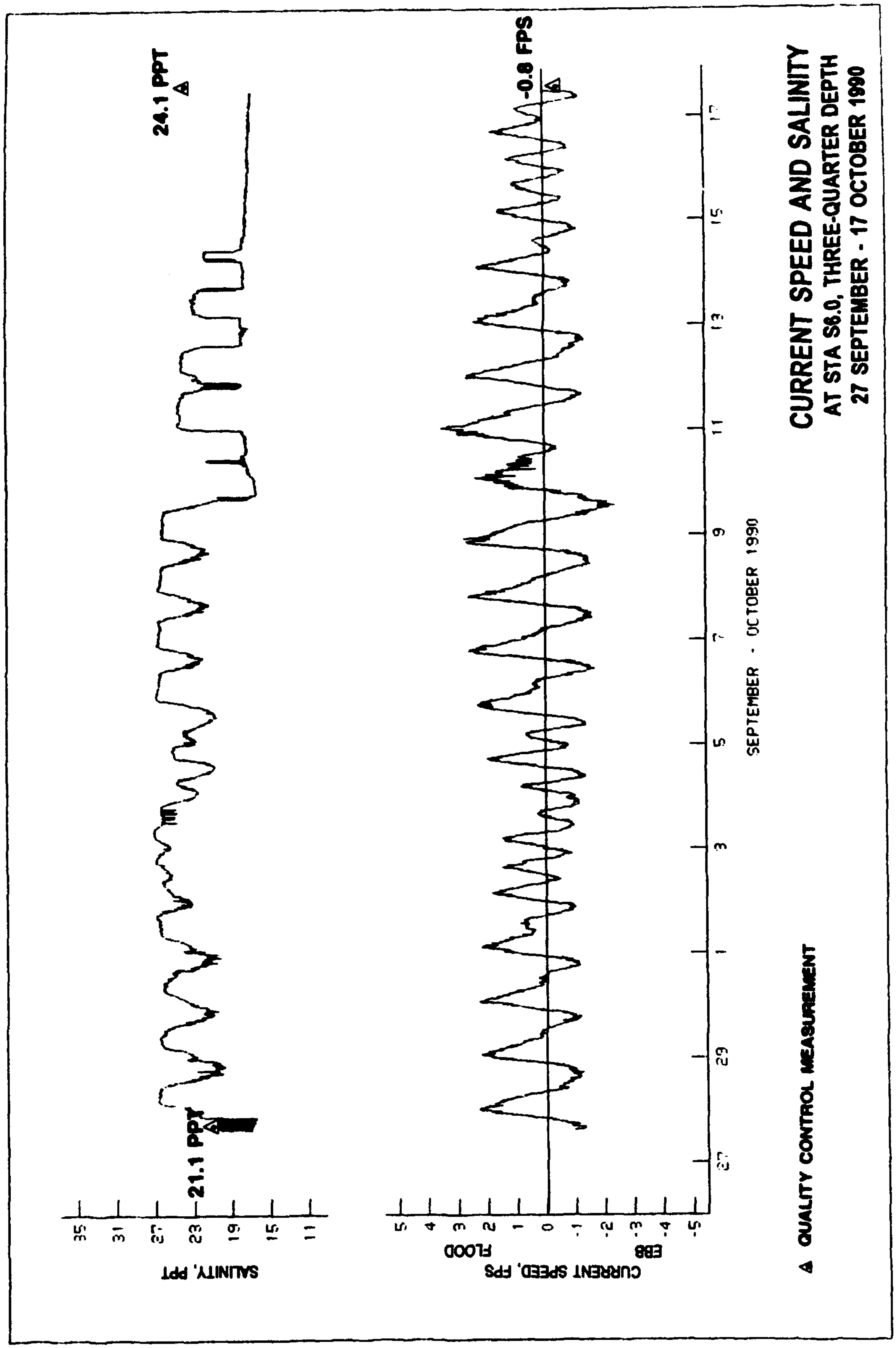
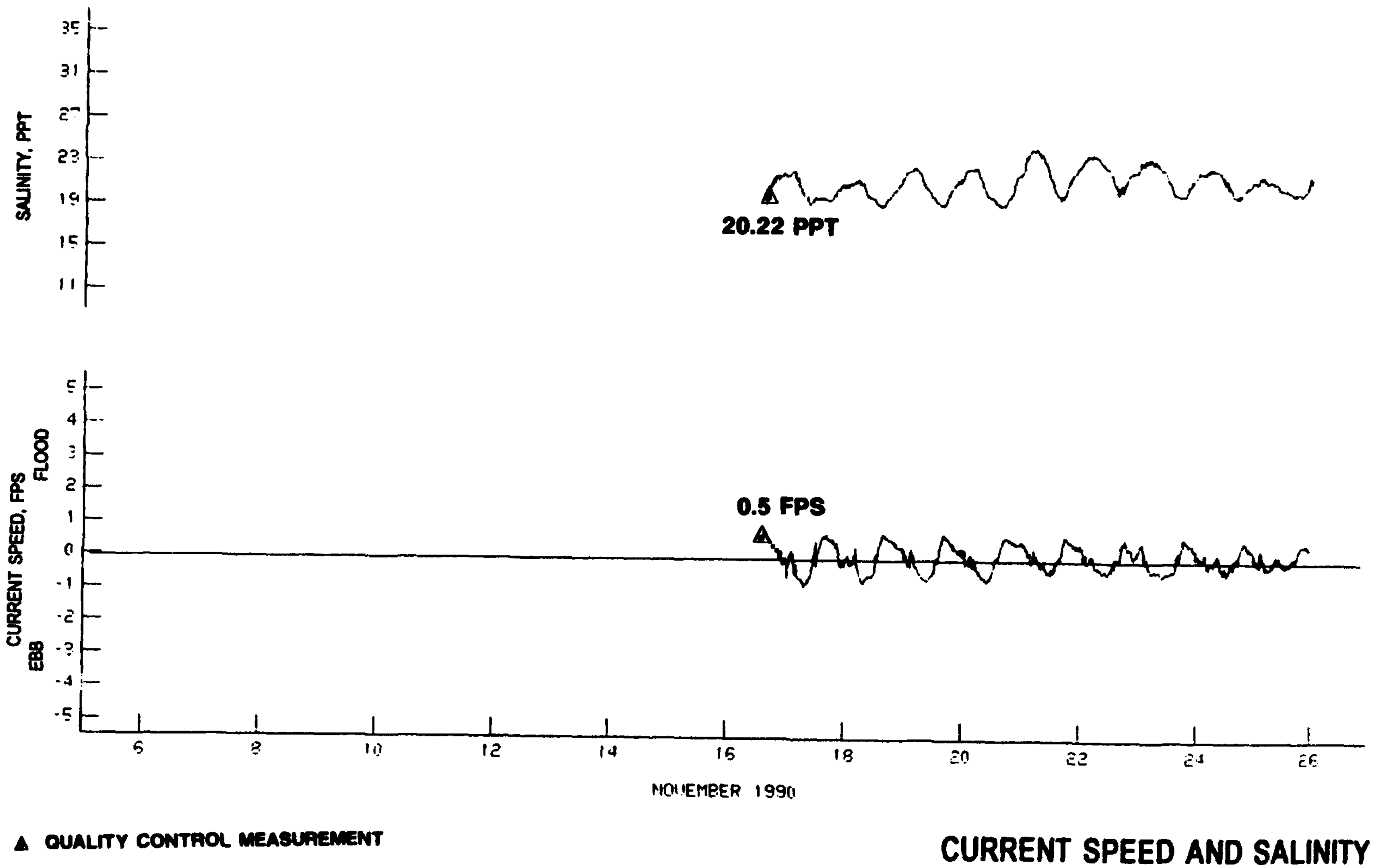
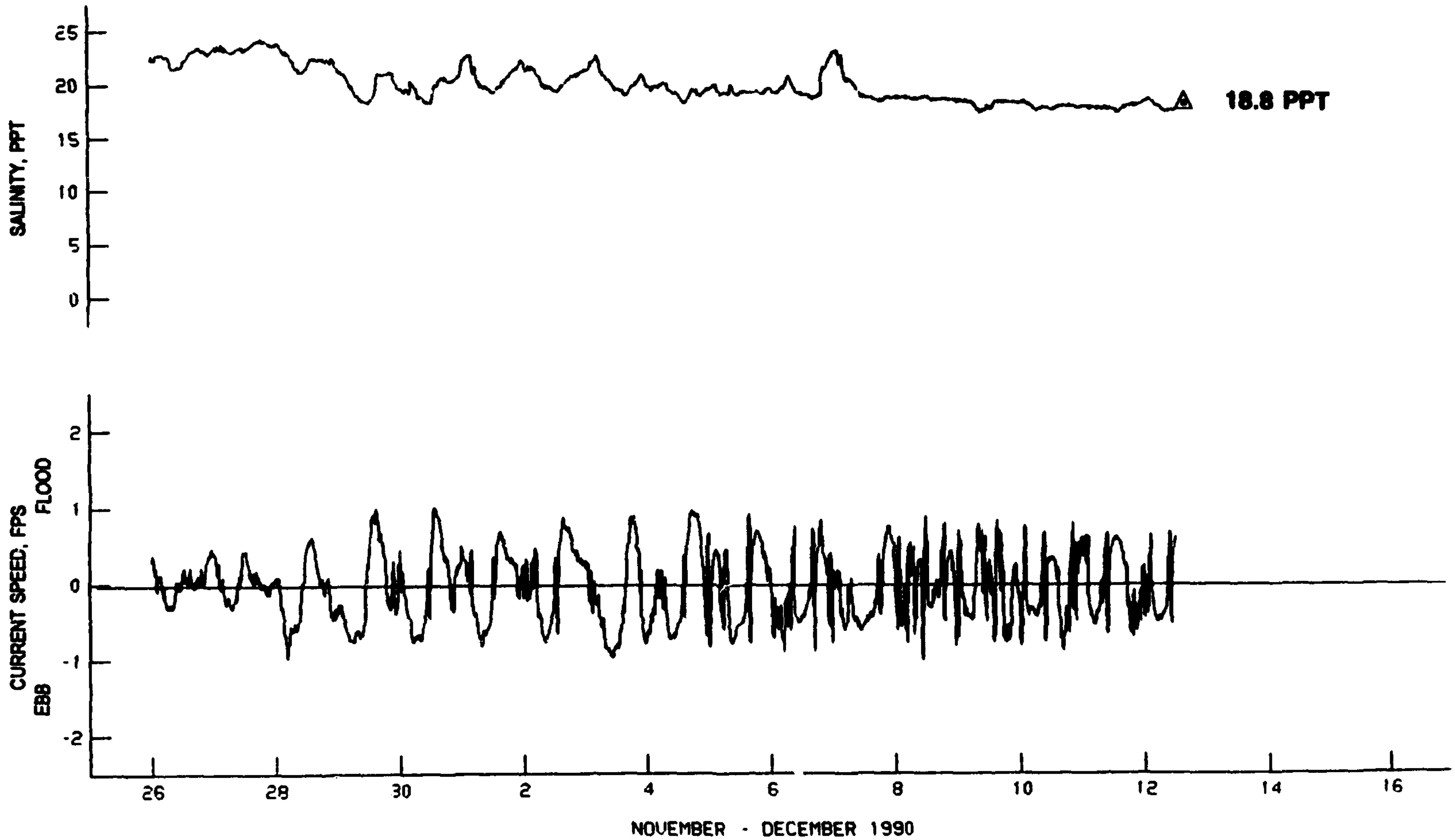

CURRENT SPEED AND SALINITY
AT STA S8.0, THREE-QUARTER DEPTH
27 SEPTEMBER - 17 OCTOBER 1990
SALINITY, PPT
35
31
27
23
19
15
11
21.1 PPT
24.1 PPT
CURRENT SPEED, FPS
FLOOD
EBB
5
4
3
2
1
0
-1
-2
-3
-4
-5
-0.8 FPS
27
29
1
3
5
7
9
11
13
15
17
SEPTEMBER - OCTOBER 1990
QUALITY CONTROL MEASUREMENT

Plate 138

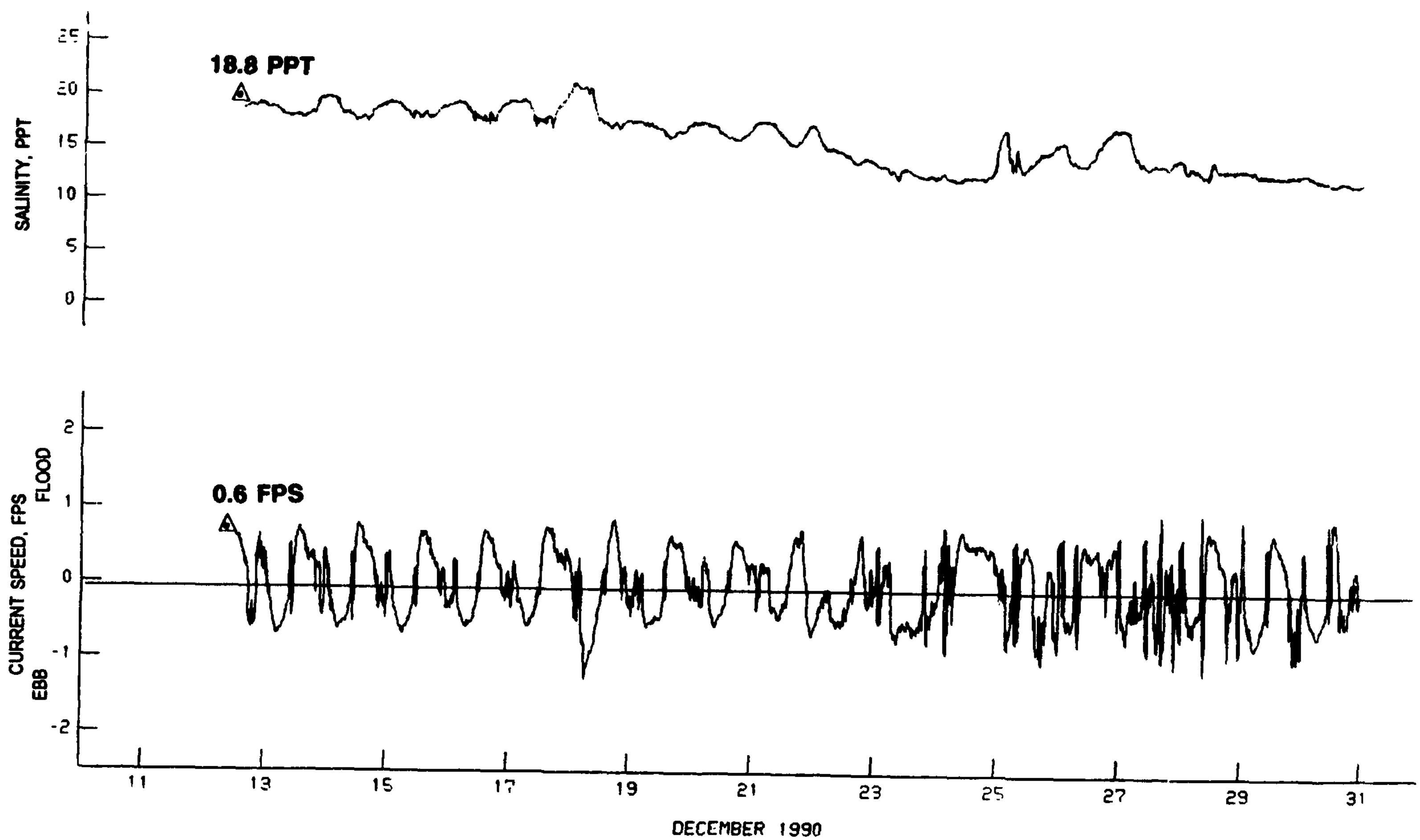


CURRENT SPEED AND SALINITY
AT STA S8.0, THREE-QUARTER DEPTH
16 - 26 NOVEMBER 1990



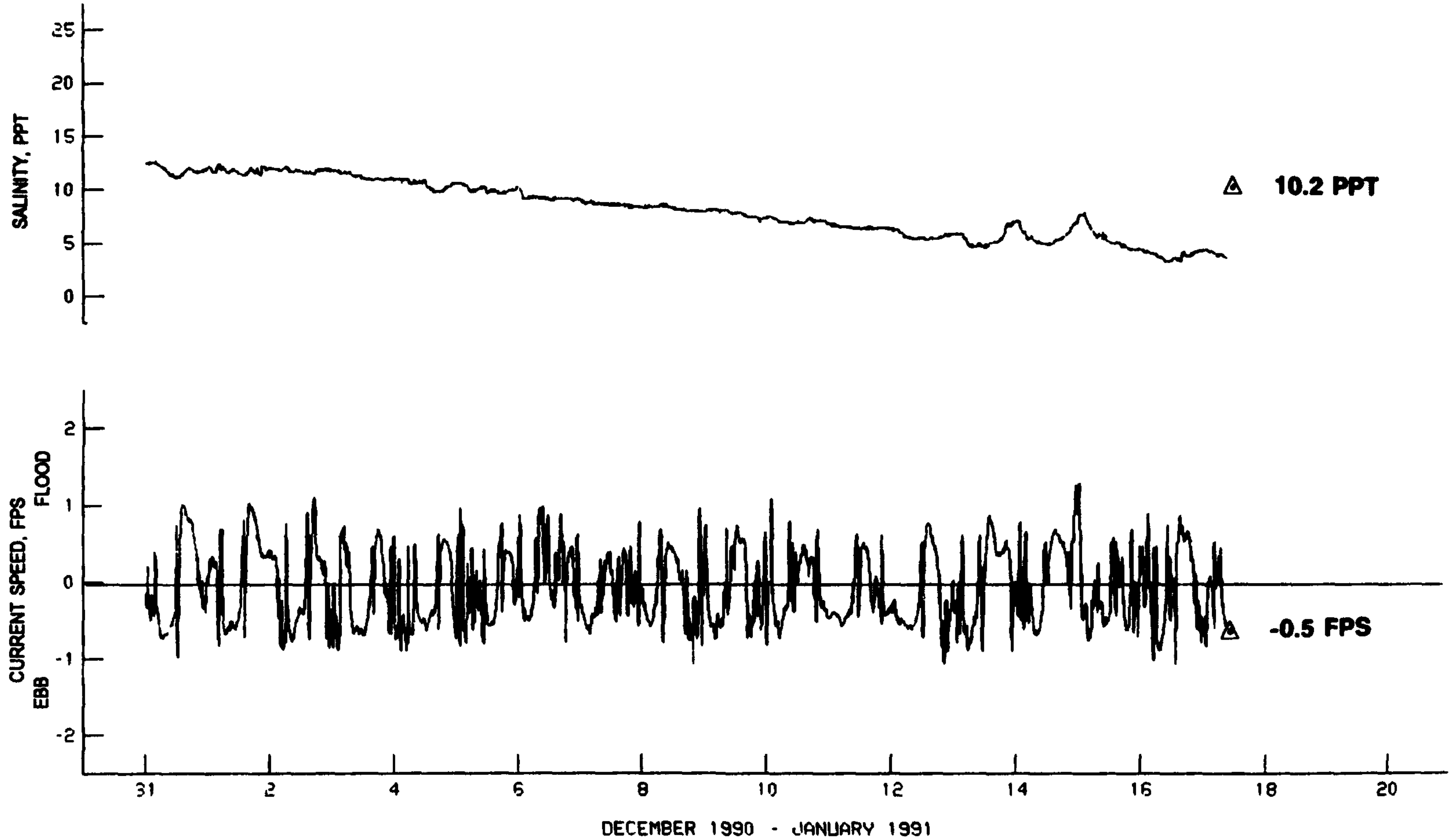
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S8.0, THREE-QUARTER DEPTH
26 NOVEMBER - 12 DECEMBER 1990



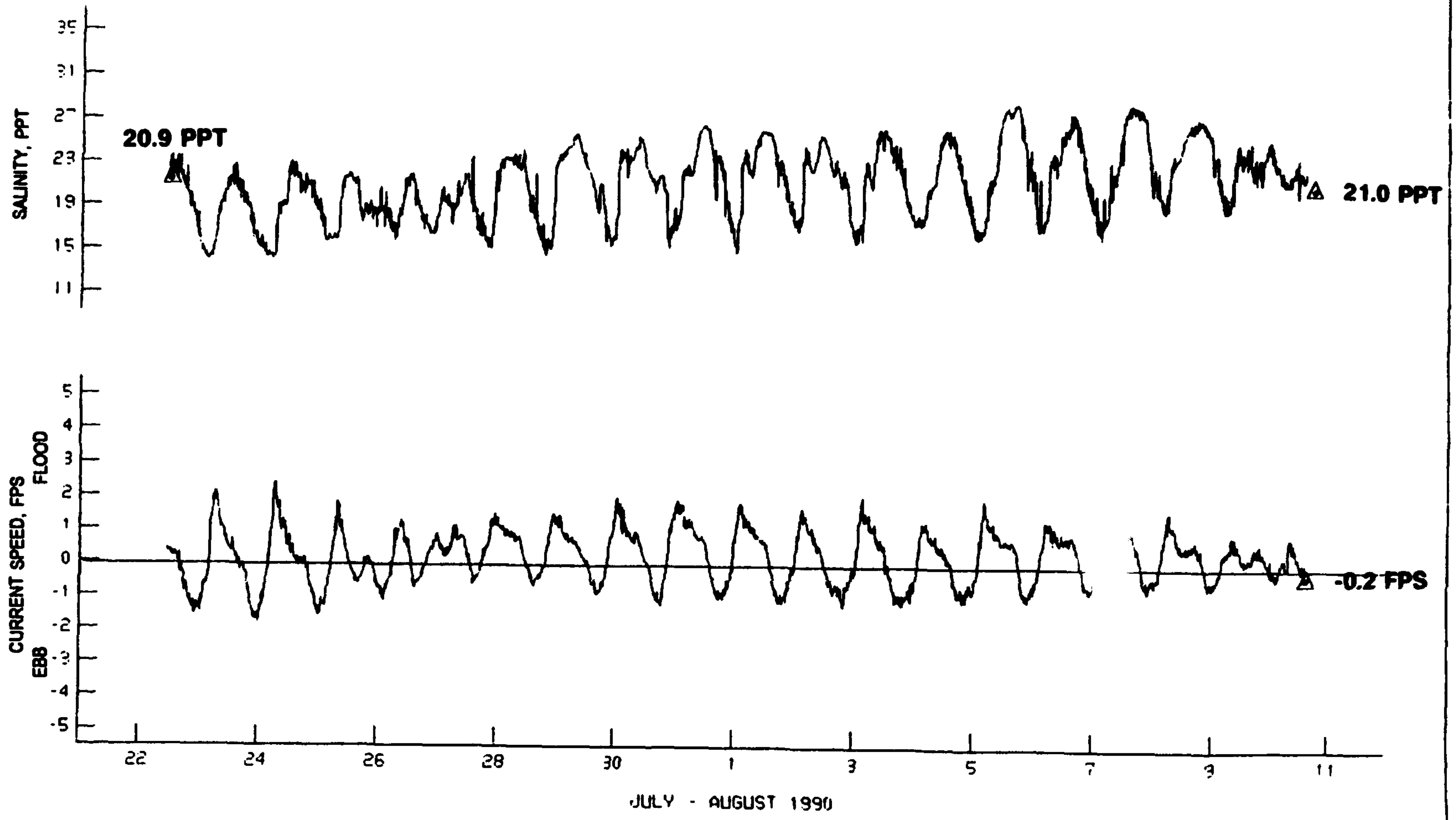
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S8.0, THREE-QUARTER DEPTH
12 - 30 DECEMBER 1990



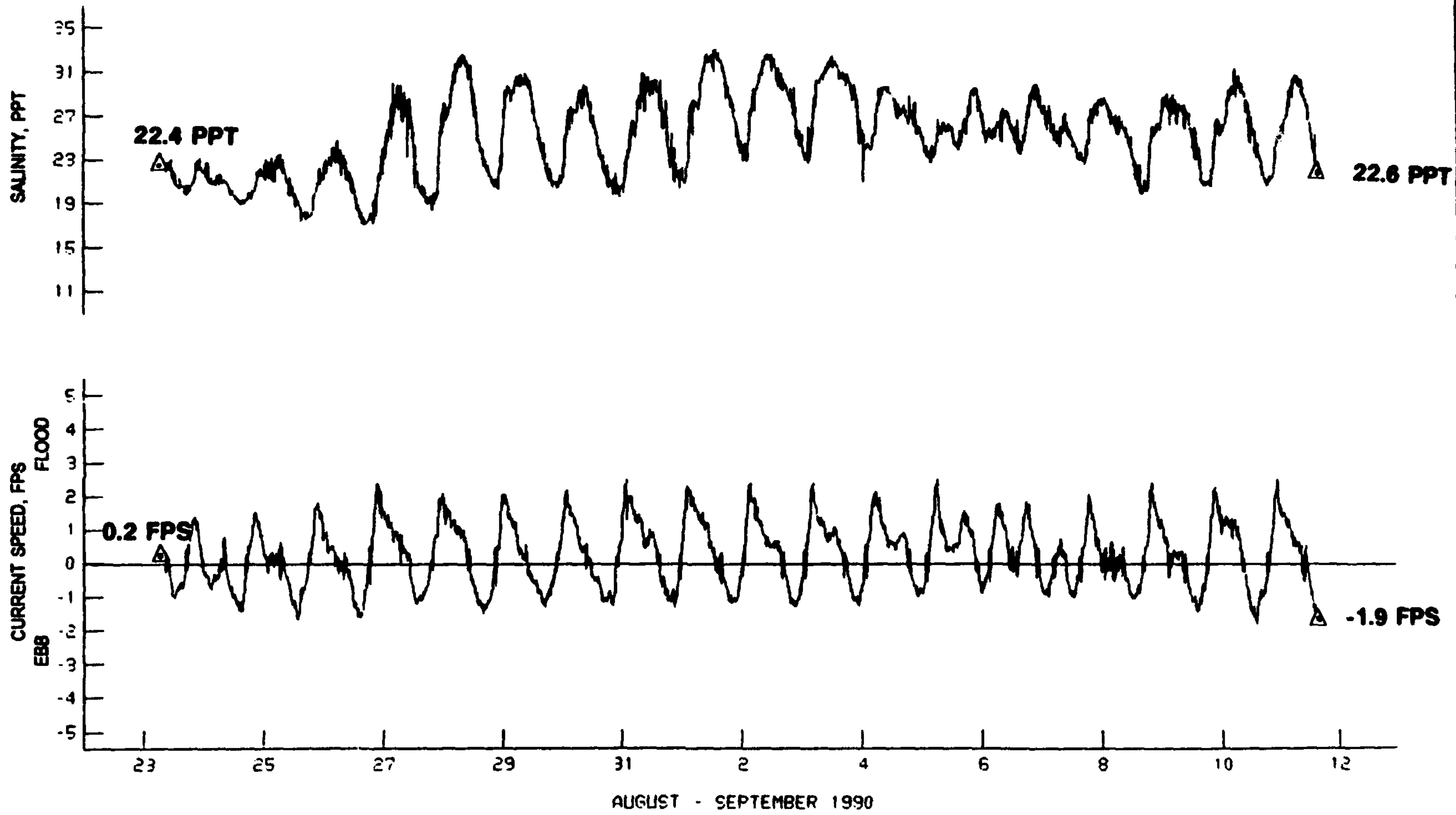
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S8.0, THREE-QUARTER DEPTH
31 DECEMBER 1990 - 17 JANUARY 1991



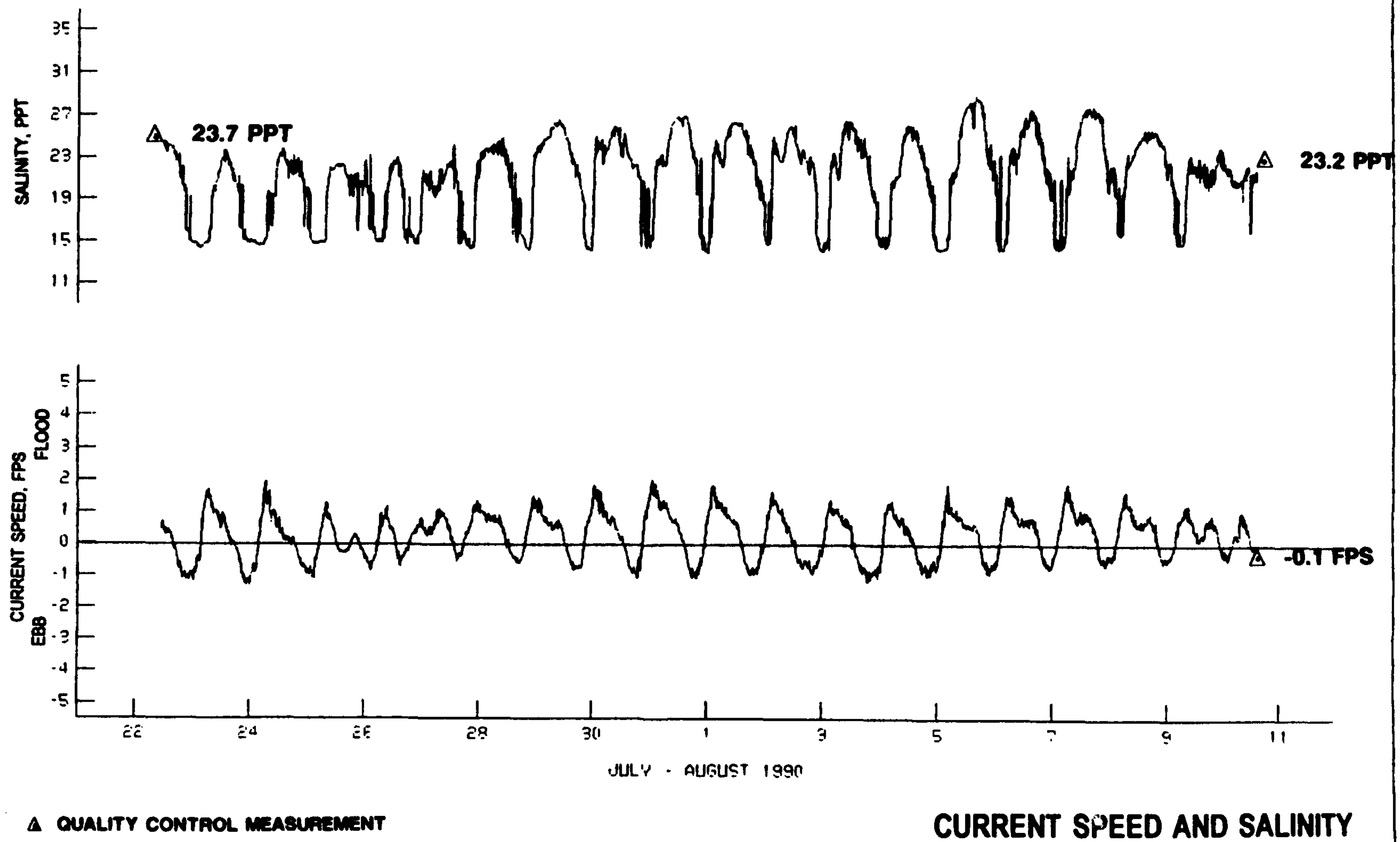
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S9.0, MIDDEPTH
22 JULY - 10 AUGUST 1990

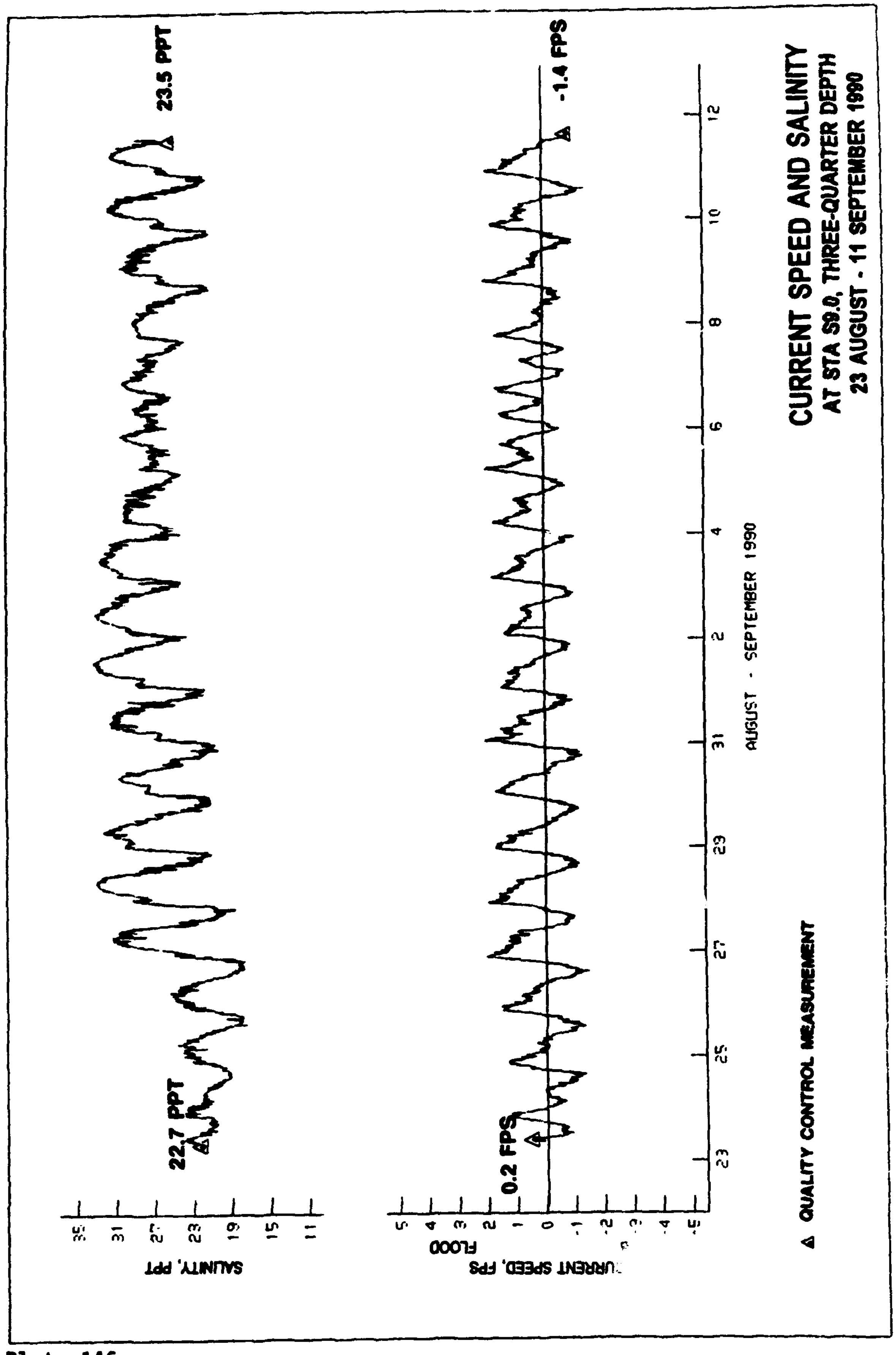


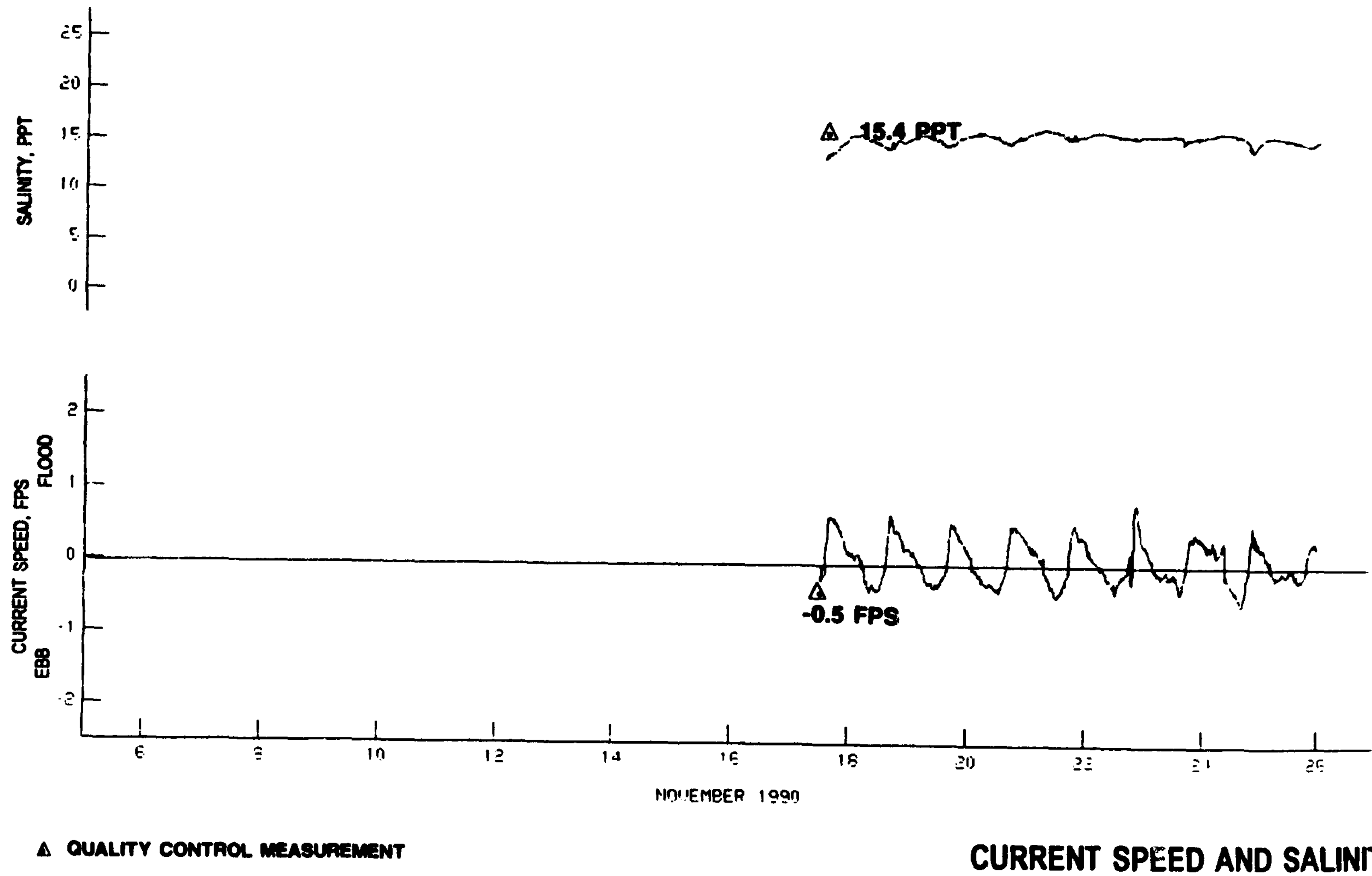
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S9.0, MIDDEPTH
23 AUGUST - 11 SEPTEMBER 1990



CURRENT SPEED AND SALINITY
AT STA S9.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990


CURRENT SPEED AND SALINITY
AT STA S9.0, THREE-QUARTER DEPTH
23 AUGUST - 11 SEPTEMBER 1990
SALINITY, PPT
35
31
27
23
19
15
11
22.7 PPT
23.5 PPT
CURRENT SPEED, FPS
FLOOD
5
4
3
2
1
0
-1
-2
-3
-4
-5
0.2 FPS
-1.4 FPS
23
25
27
29
31
2
4
6
8
10
12
AUGUST - SEPTEMBER 1990
Δ QUALITY CONTROL MEASUREMENT



CURRENT SPEED AND SALINITY
AT STA S11.1, THREE-QUARTER DEPTH
17 - 26 NOVEMBER 1990

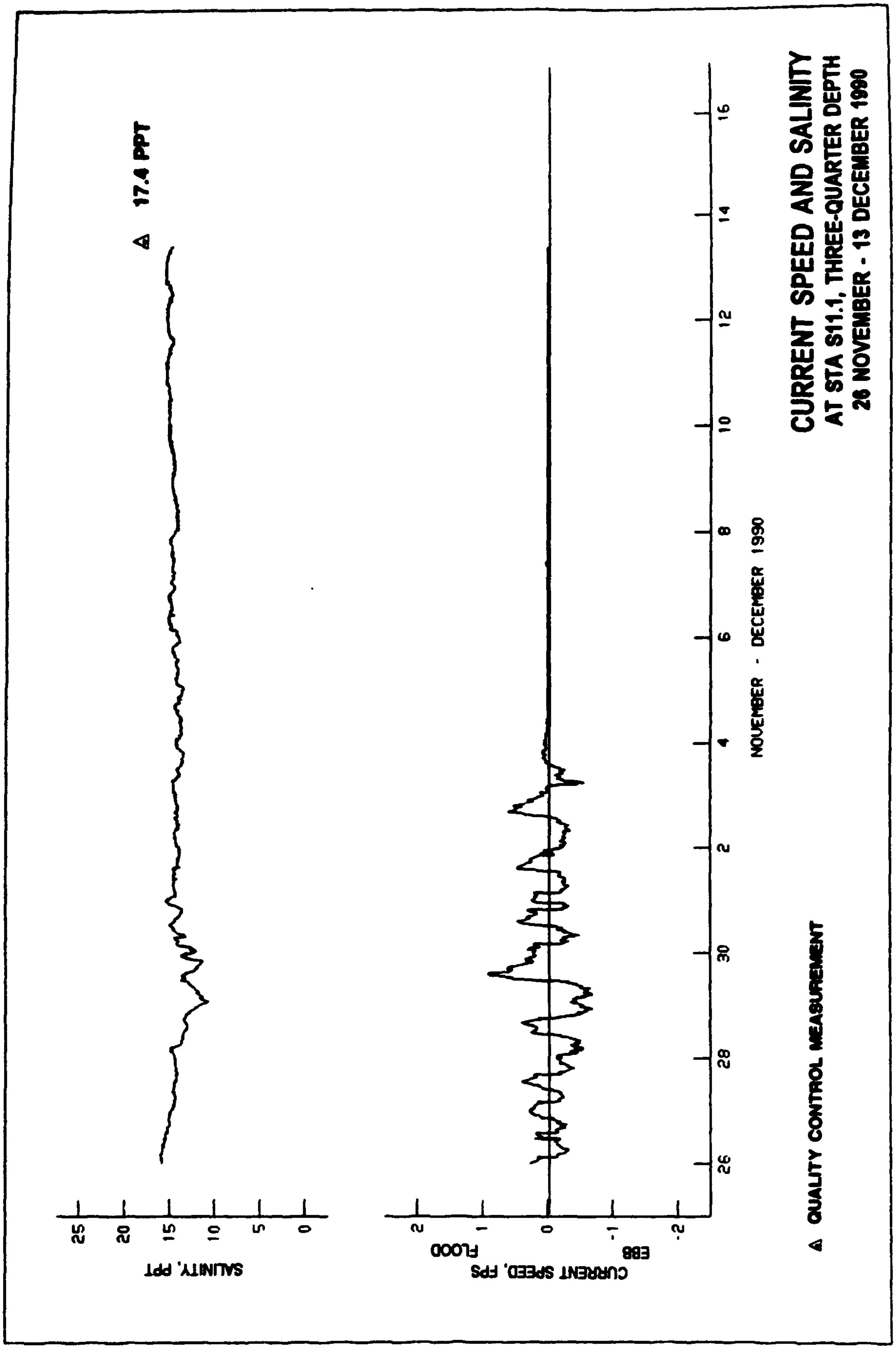
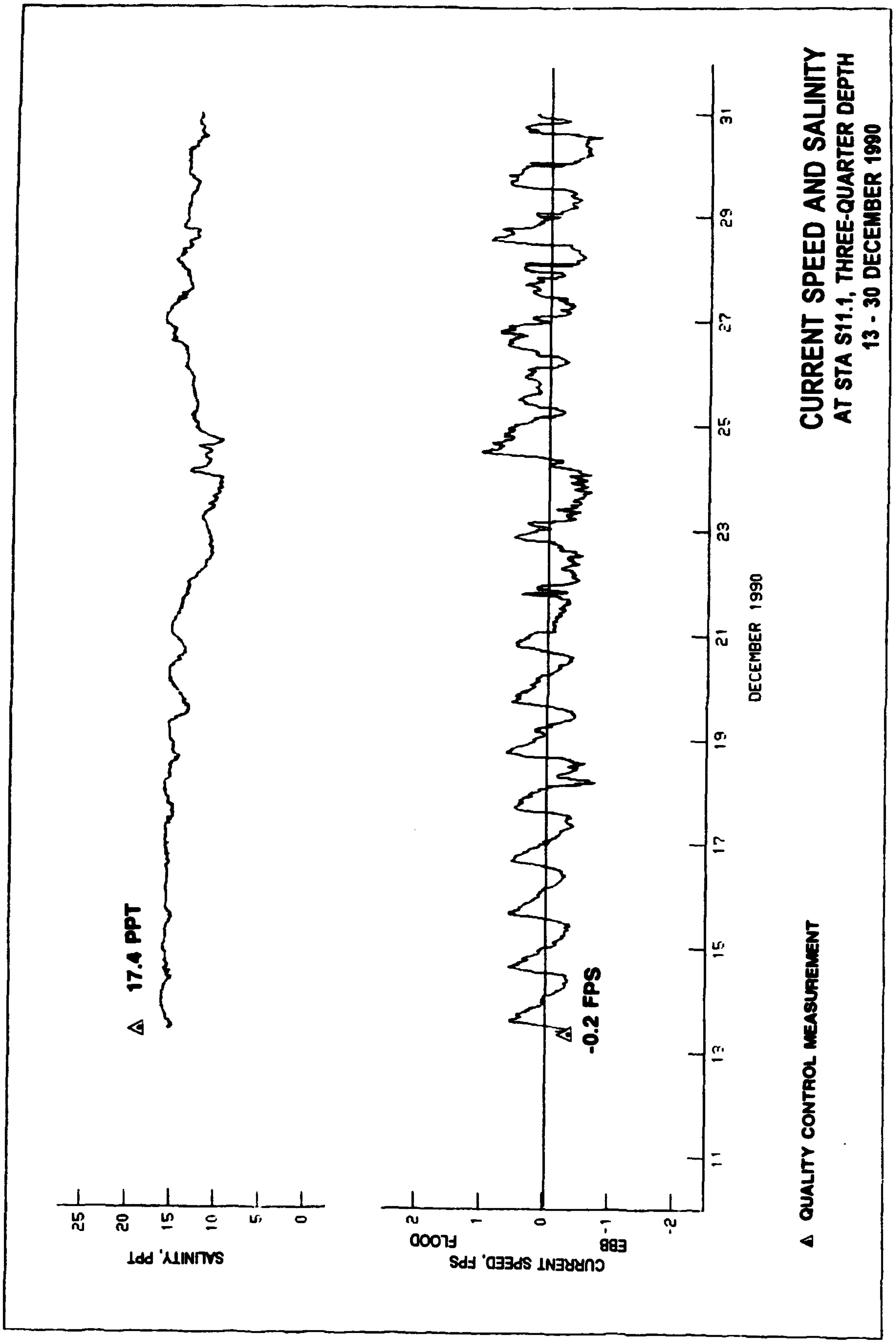
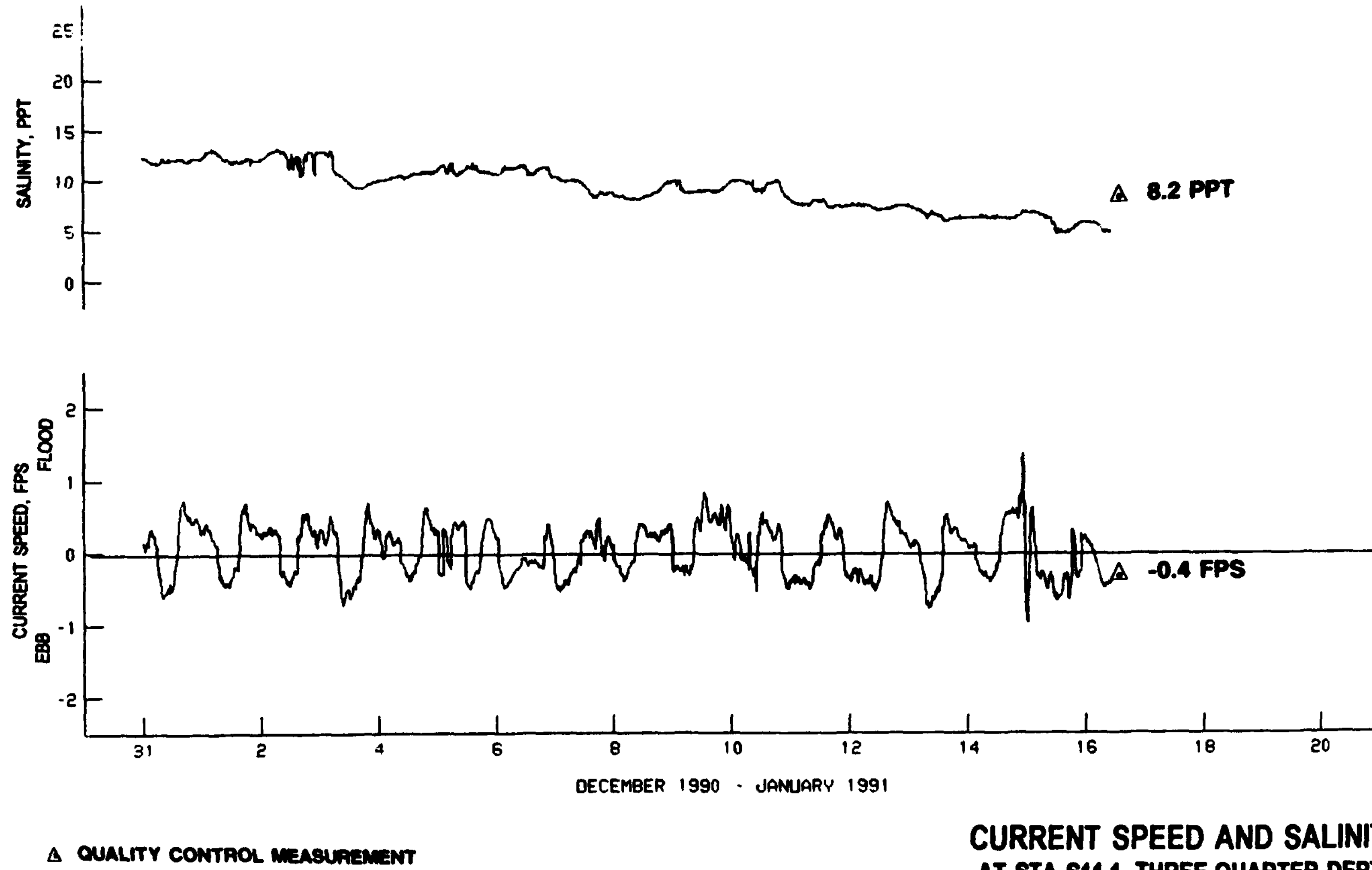
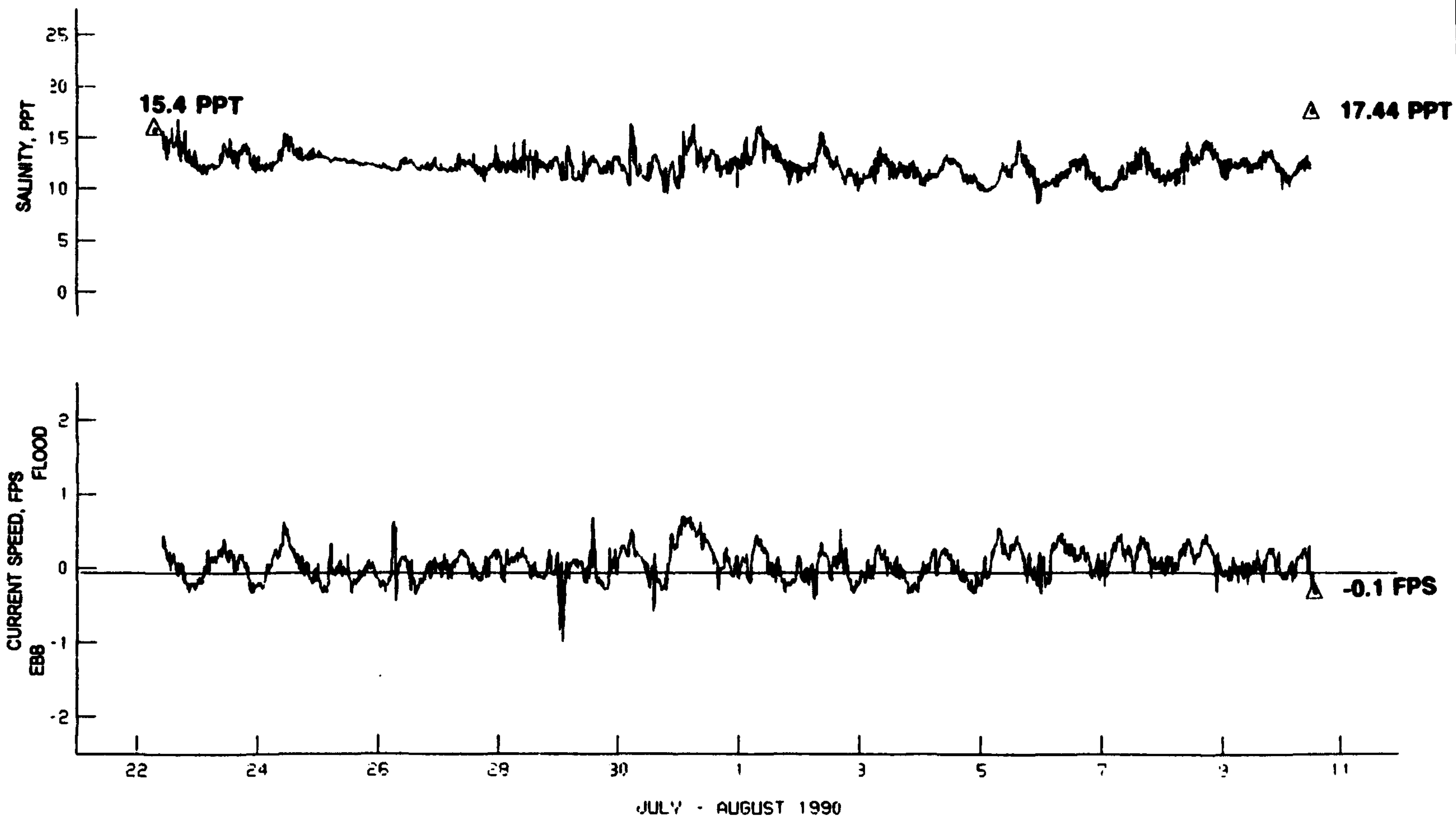

CURRENT SPEED AND SALINITY
AT STA S11.1, THREE-QUARTER DEPTH
26 NOVEMBER - 13 DECEMBER 1990
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
NOVEMBER - DECEMBER 1990
17.4 PPT
QUALITY CONTROL MEASUREMENT

Plate 148


CURRENT SPEED AND SALINITY
AT STA S11.1, THREE-QUARTER DEPTH
13 - 30 DECEMBER 1990
SALINITY, PPT
25
20
15
10
5
0
17.4 PPT
CURRENT SPEED, FPS
FLOOD
EBB
2
1
0
-1
-2
-0.2 FPS
11
13
15
17
19
21
23
25
27
29
31
DECEMBER 1990
QUALITY CONTROL MEASUREMENT

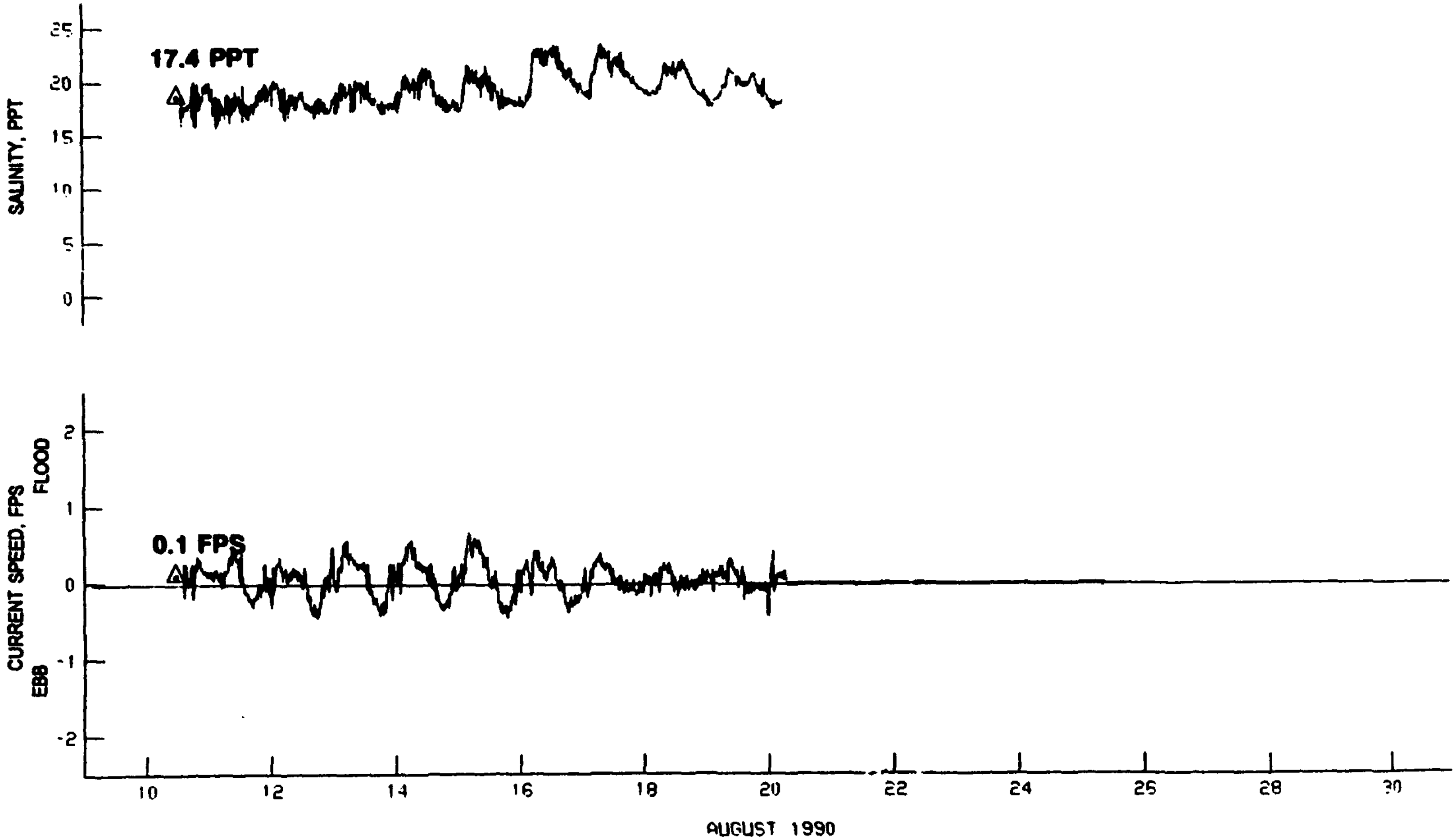


CURRENT SPEED AND SALINITY
AT STA S11.1, THREE-QUARTER DEPTH
31 DECEMBER 1990 - 16 JANUARY 1991



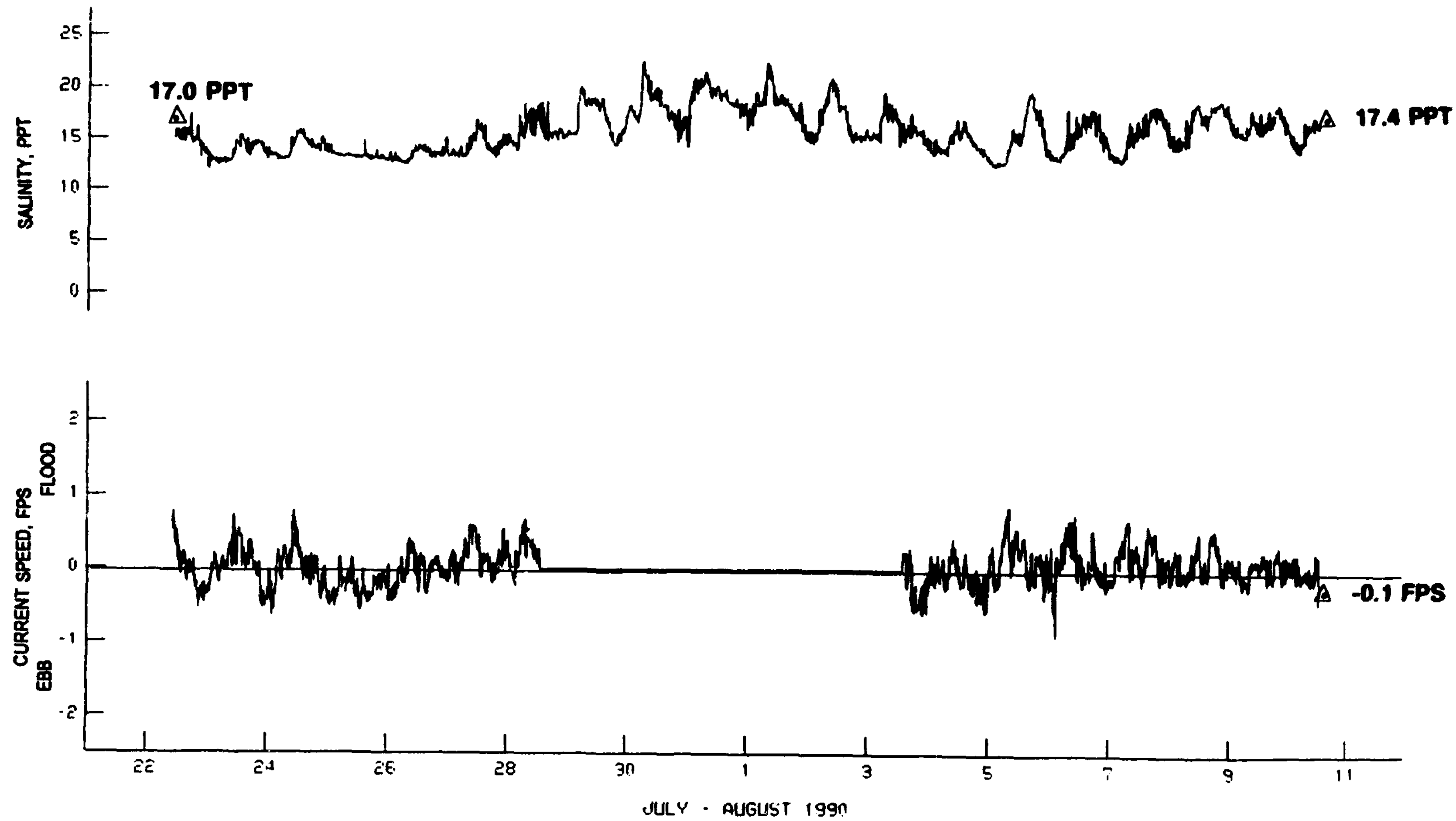
△ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S12.0, MIDDEPTH
22 JULY - 10 AUGUST 1990



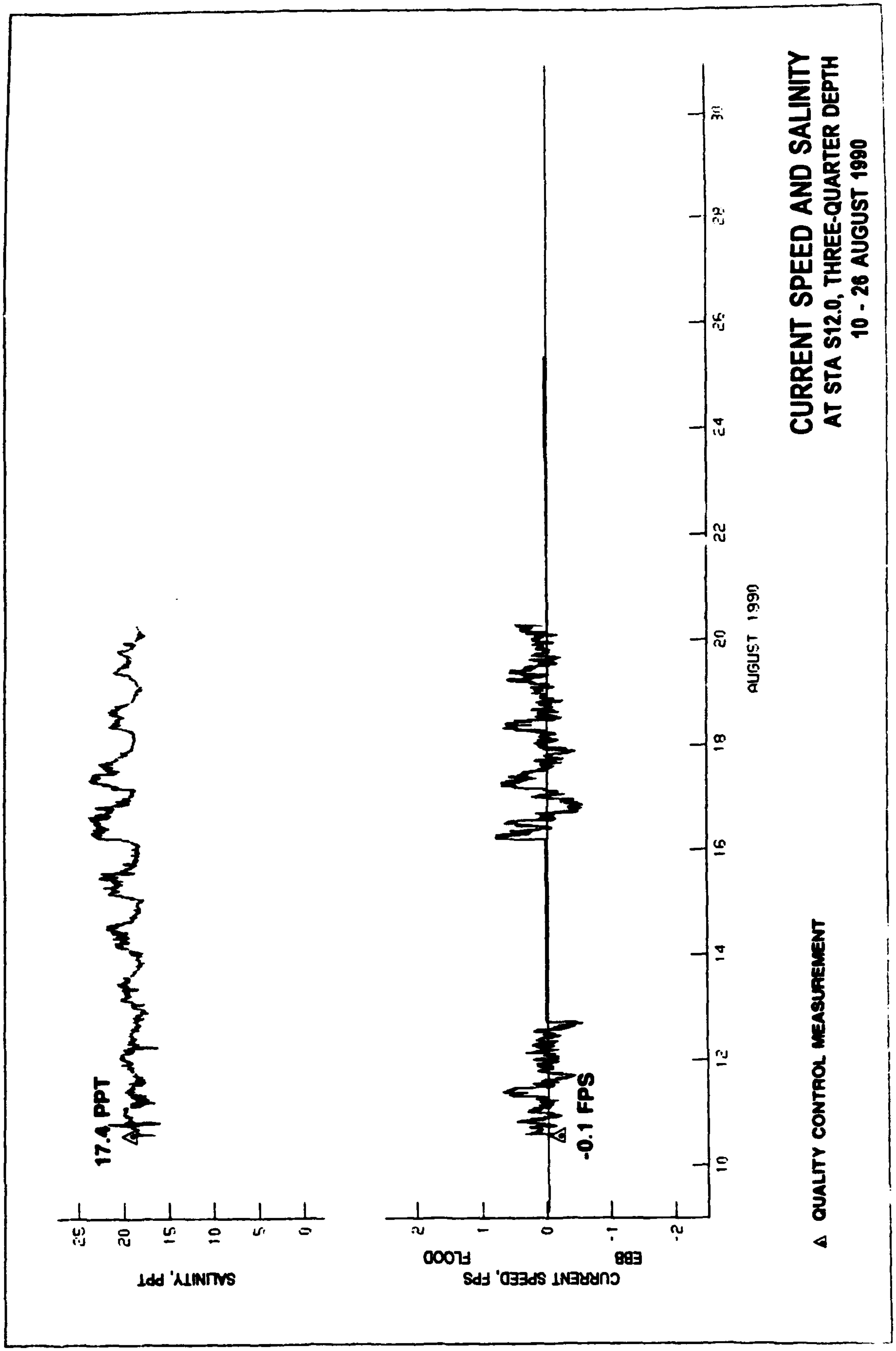
Δ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S12.0, MIDDEPTH
10 - 26 AUGUST 1990



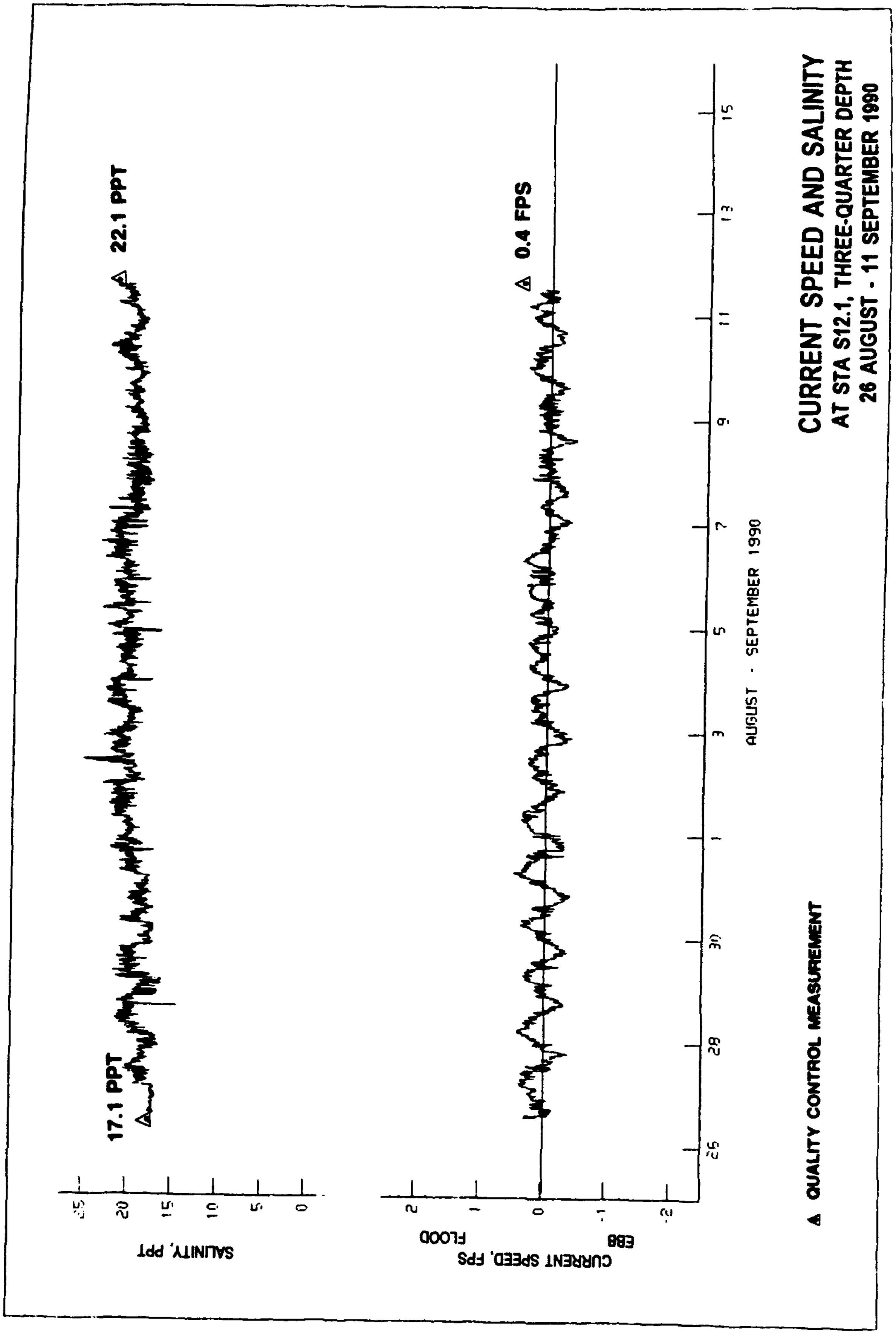
Δ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S12.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990



CURRENT SPEED AND SALINITY
AT STA S12.0, THREE-QUARTER DEPTH
10 - 26 AUGUST 1990

Plate 154



CURRENT SPEED AND SALINITY
AT STA S12.1, THREE-QUARTER DEPTH
26 AUGUST - 11 SEPTEMBER 1990

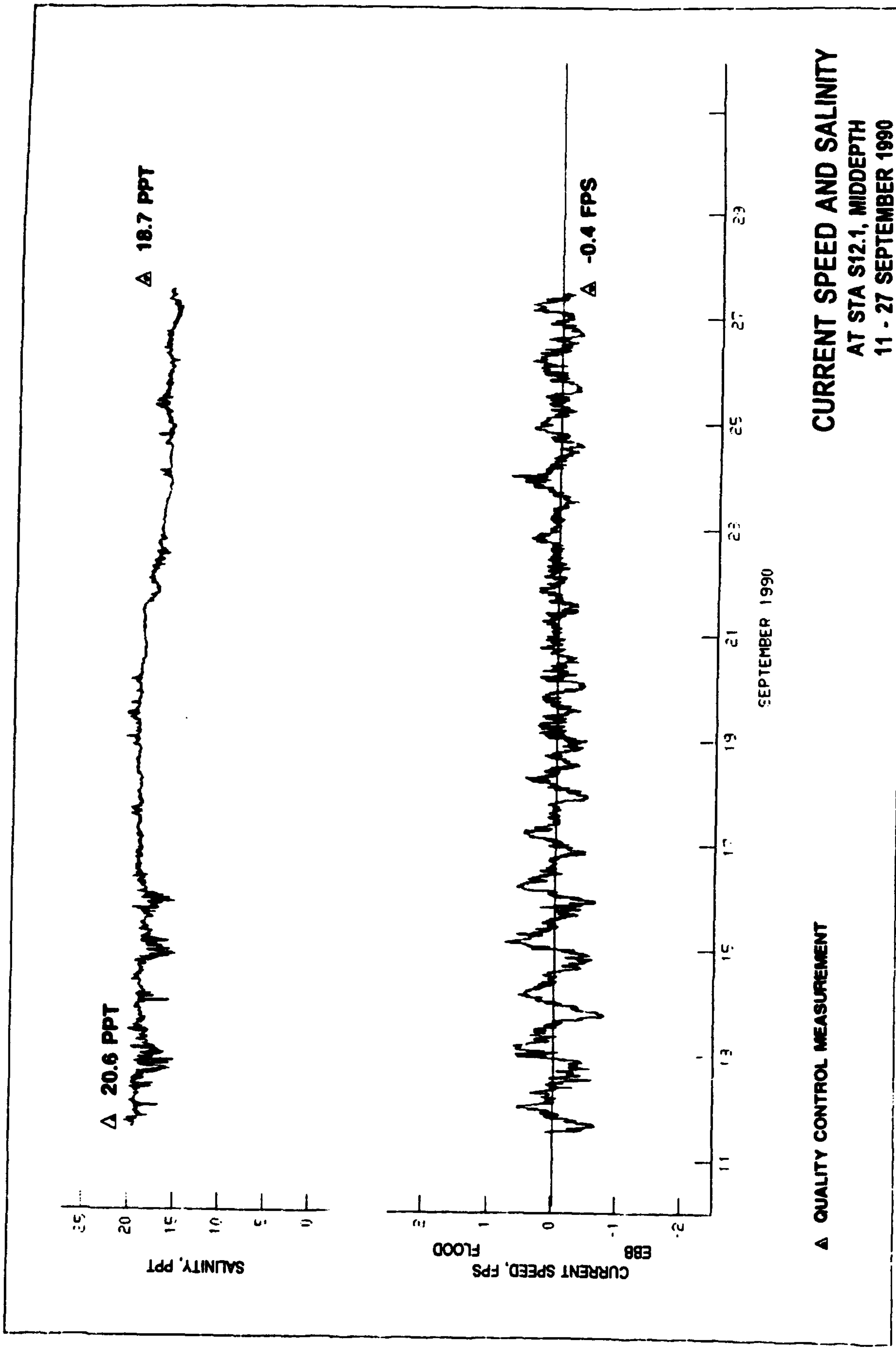
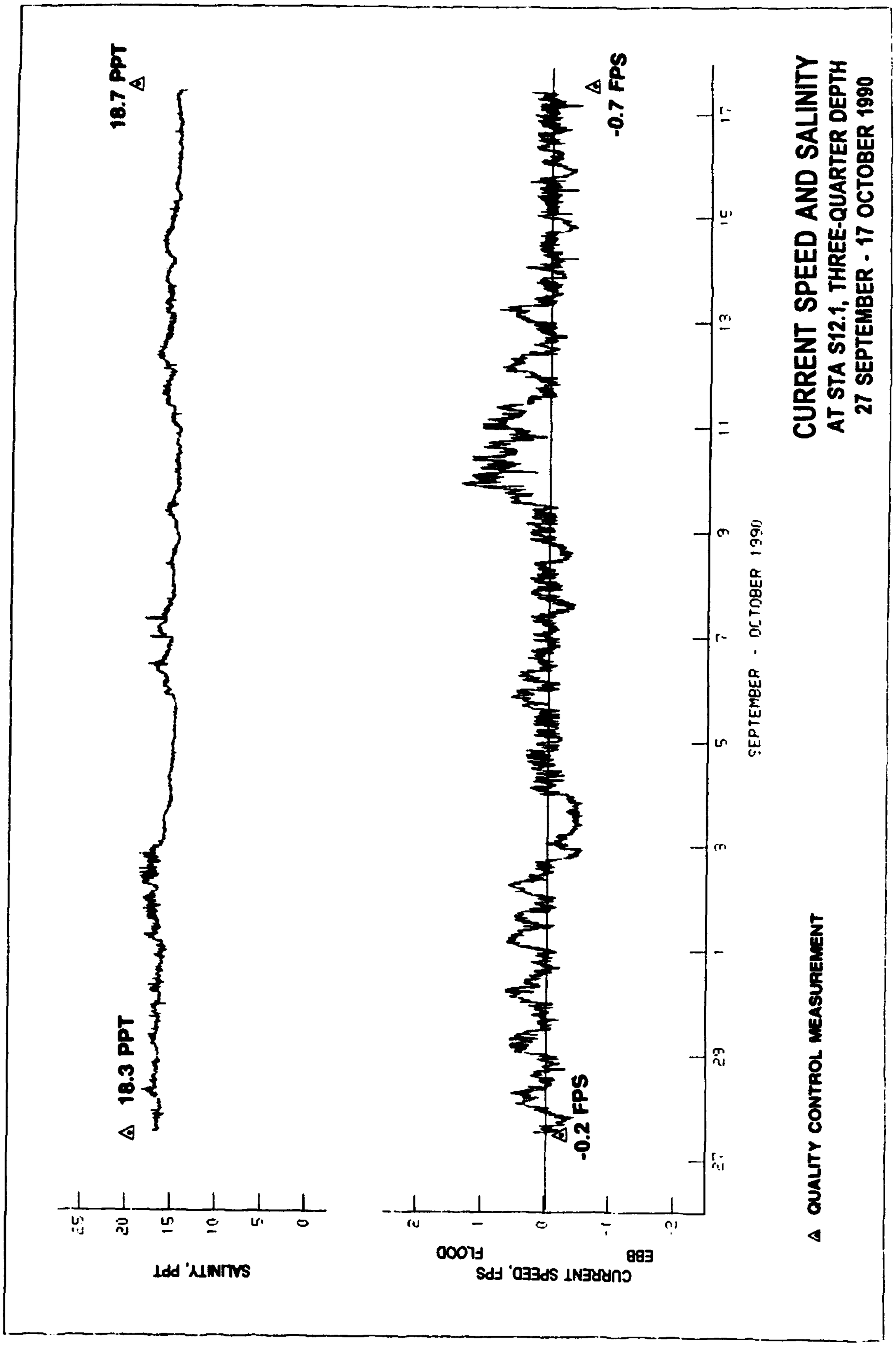
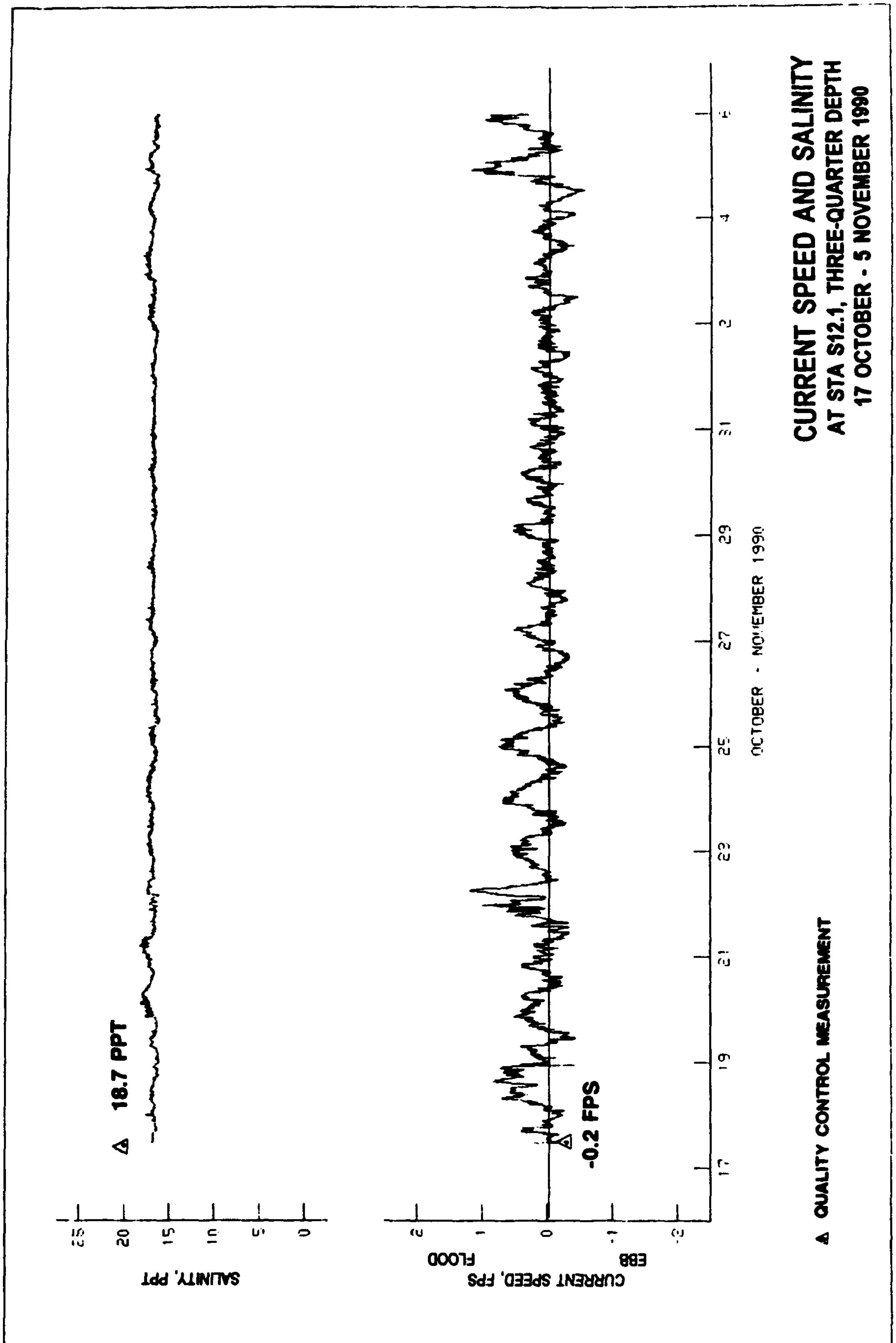
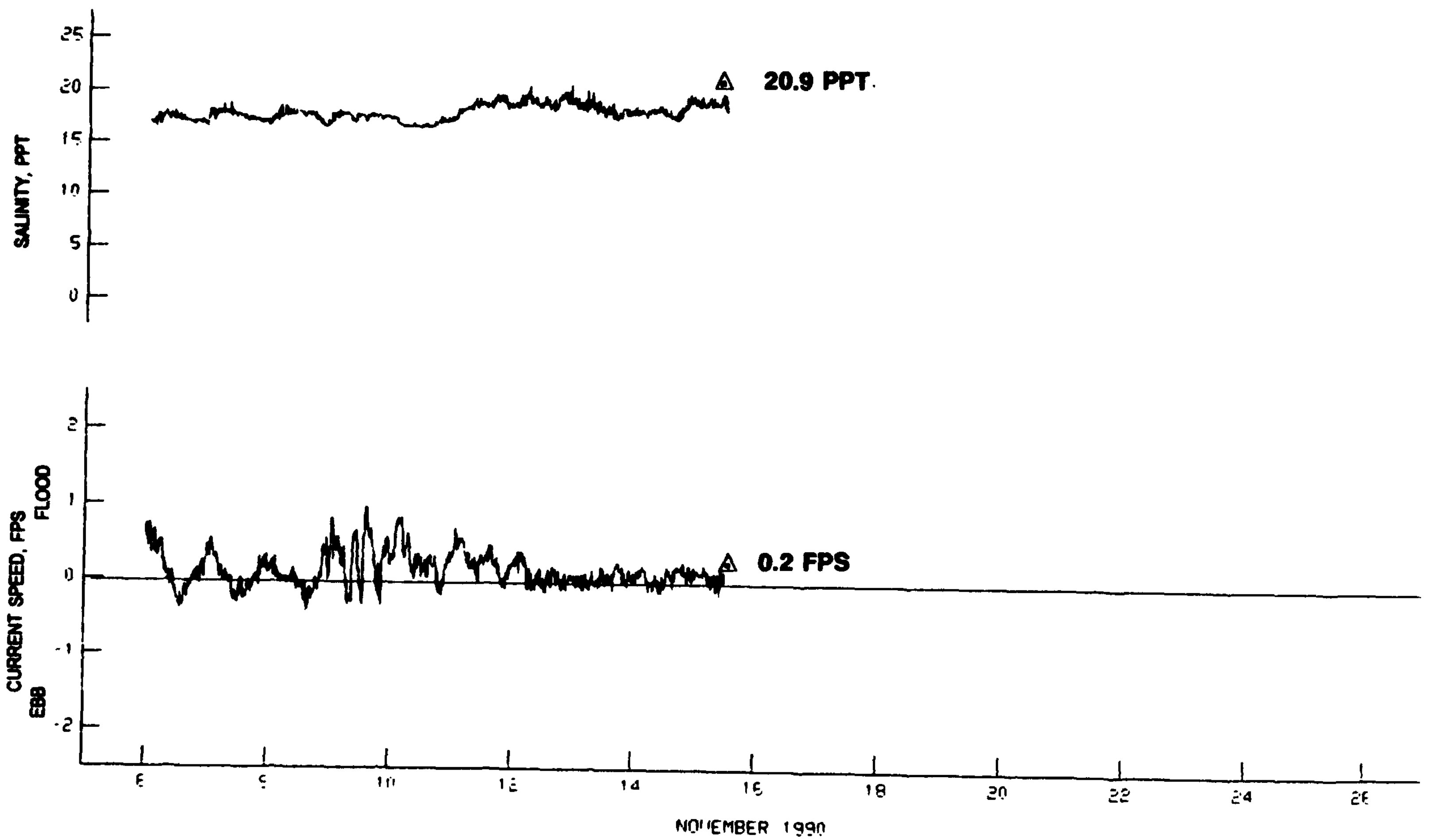

CURRENT SPEED AND SALINITY
AT STA S12.1, MIDDEPTH
11 - 27 SEPTEMBER 1990
Δ QUALITY CONTROL MEASUREMENT
Δ 20.6 PPT
Δ 18.7 PPT
Δ -0.4 FPS
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
SEPTEMBER 1990

Plate 156

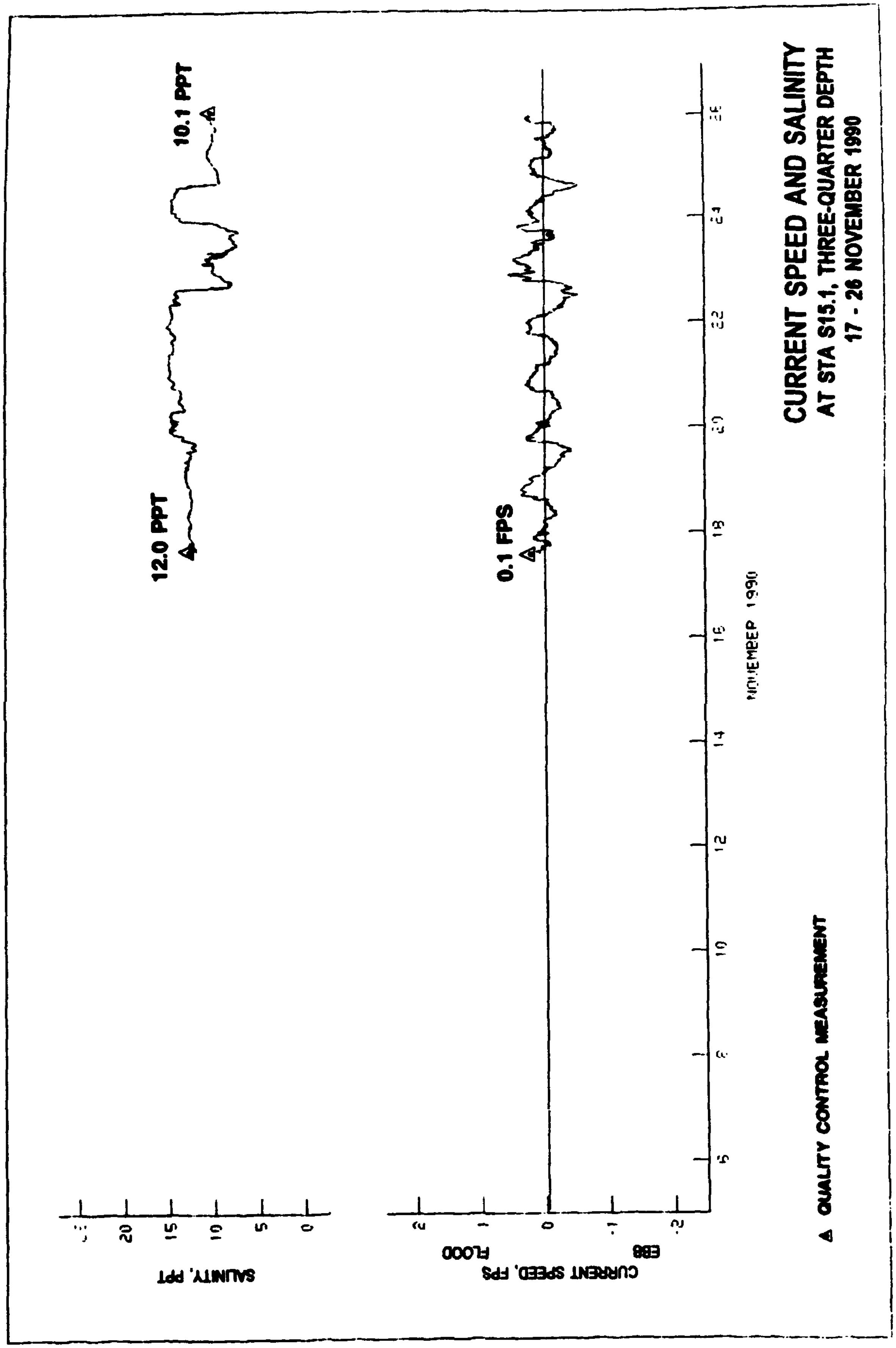

CURRENT SPEED AND SALINITY
AT STA S12.1, THREE-QUARTER DEPTH
27 SEPTEMBER - 17 OCTOBER 1990
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
18.3 PPT
18.7 PPT
-0.2 FPS
-0.7 FPS
SEPTEMBER - OCTOBER 1990
QUALITY CONTROL MEASUREMENT


CURRENT SPEED AND SALINITY
AT STA S12.1, THREE-QUARTER DEPTH
17 OCTOBER - 5 NOVEMBER 1990
SALINITY, PPT
CURRENT SPEED, FPS
FLOOD
EBB
18.7 PPT
-0.2 FPS
OCTOBER - NOVEMBER 1990
QUALITY CONTROL MEASUREMENT



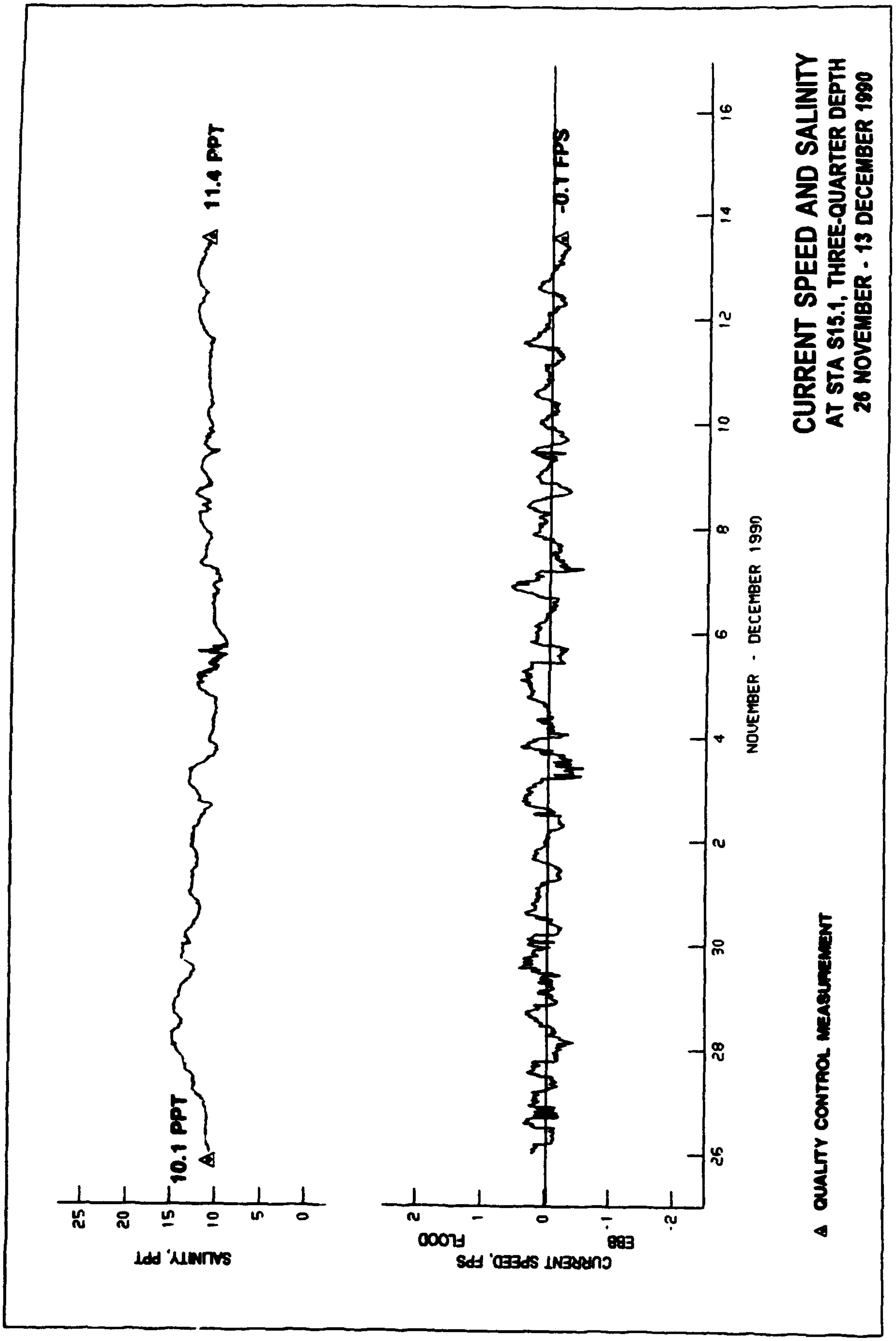
▲ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S12.1, THREE-QUARTER DEPTH
6 - 16 NOVEMBER 1990

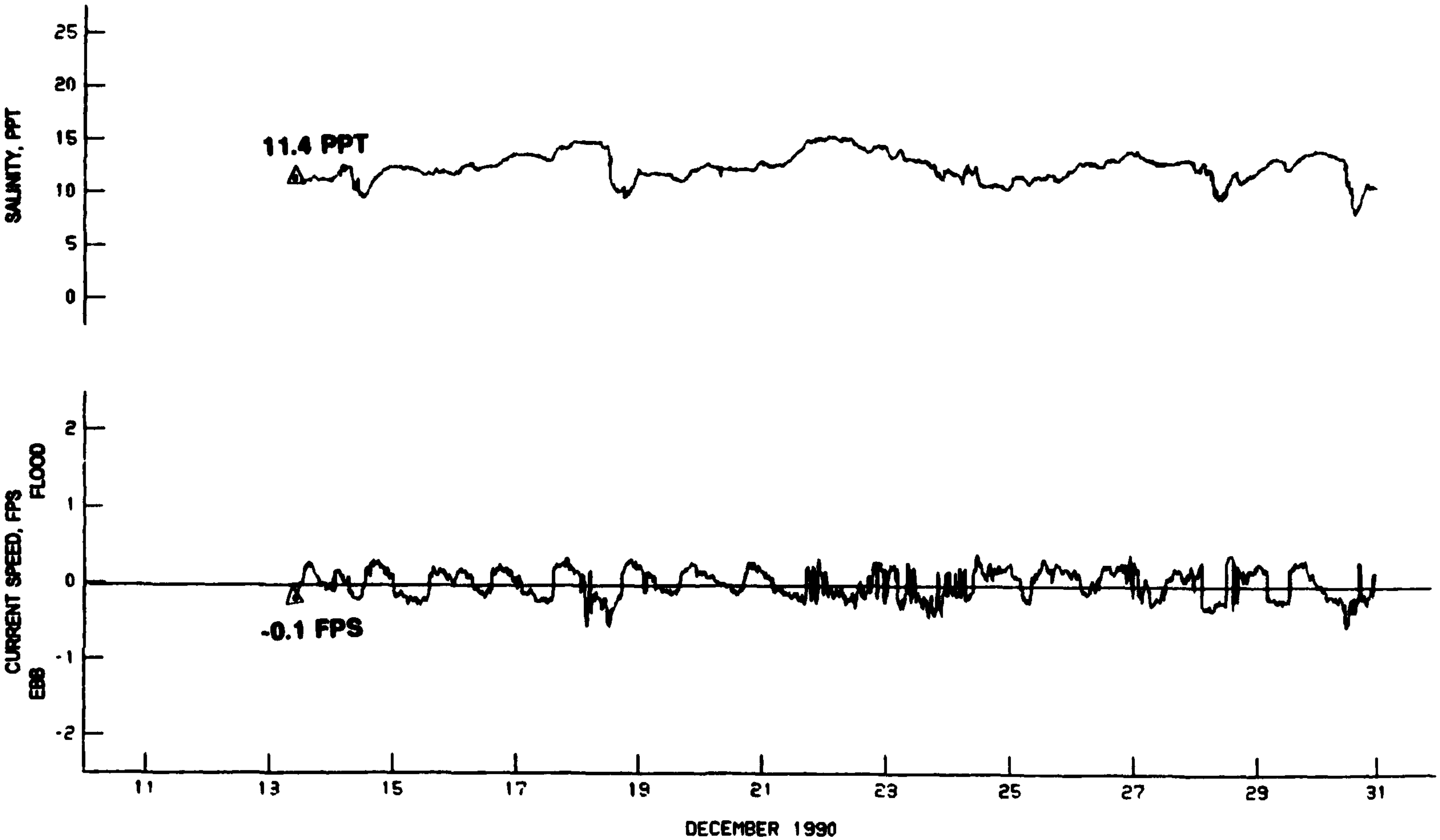


CURRENT SPEED AND SALINITY
AT STA S15.1, THREE-QUARTER DEPTH
17 - 26 NOVEMBER 1990
QUALITY CONTROL MEASUREMENT
SALINITY, PPT
20
15
10
5
0
CURRENT SPEED, FPS
FLOOD
EBB
2
1
0
-1
-2
12.0 PPT
10.1 PPT
0.1 FPS
NOVEMBER 1990
8
10
12
14
16
18
22

Plate 160

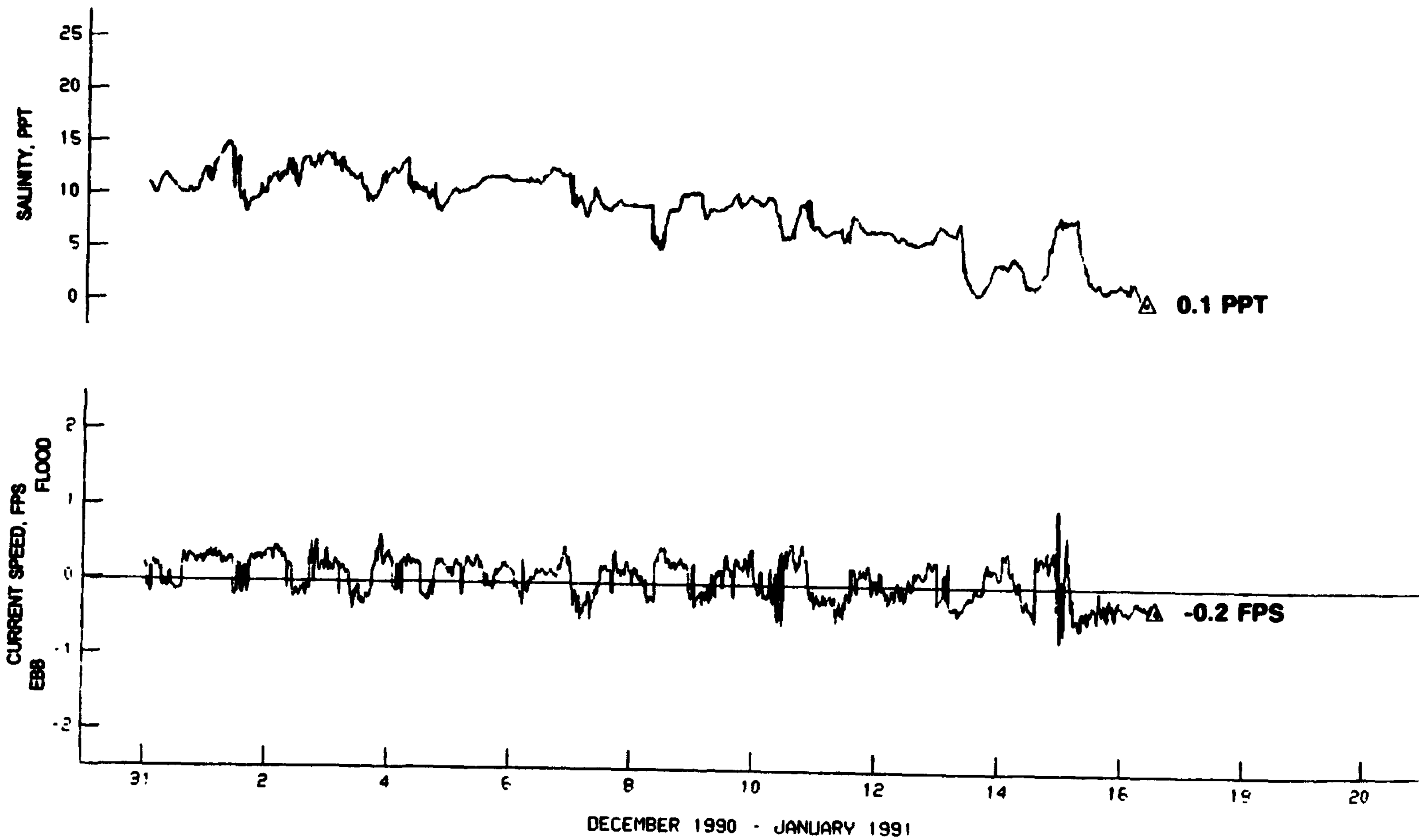


CURRENT SPEED AND SALINITY
AT STA S15.1, THREE-QUARTER DEPTH
26 NOVEMBER - 13 DECEMBER 1990
SALINITY, PPT
25
20
15
10
5
0
10.1 PPT
11.4 PPT
CURRENT SPEED, FPS
FLOOD
EBB
2
1
0
-1
-2
-0.1 FPS
26
28
30
2
4
6
8
10
12
14
16
NOVEMBER - DECEMBER 1990
QUALITY CONTROL MEASUREMENT



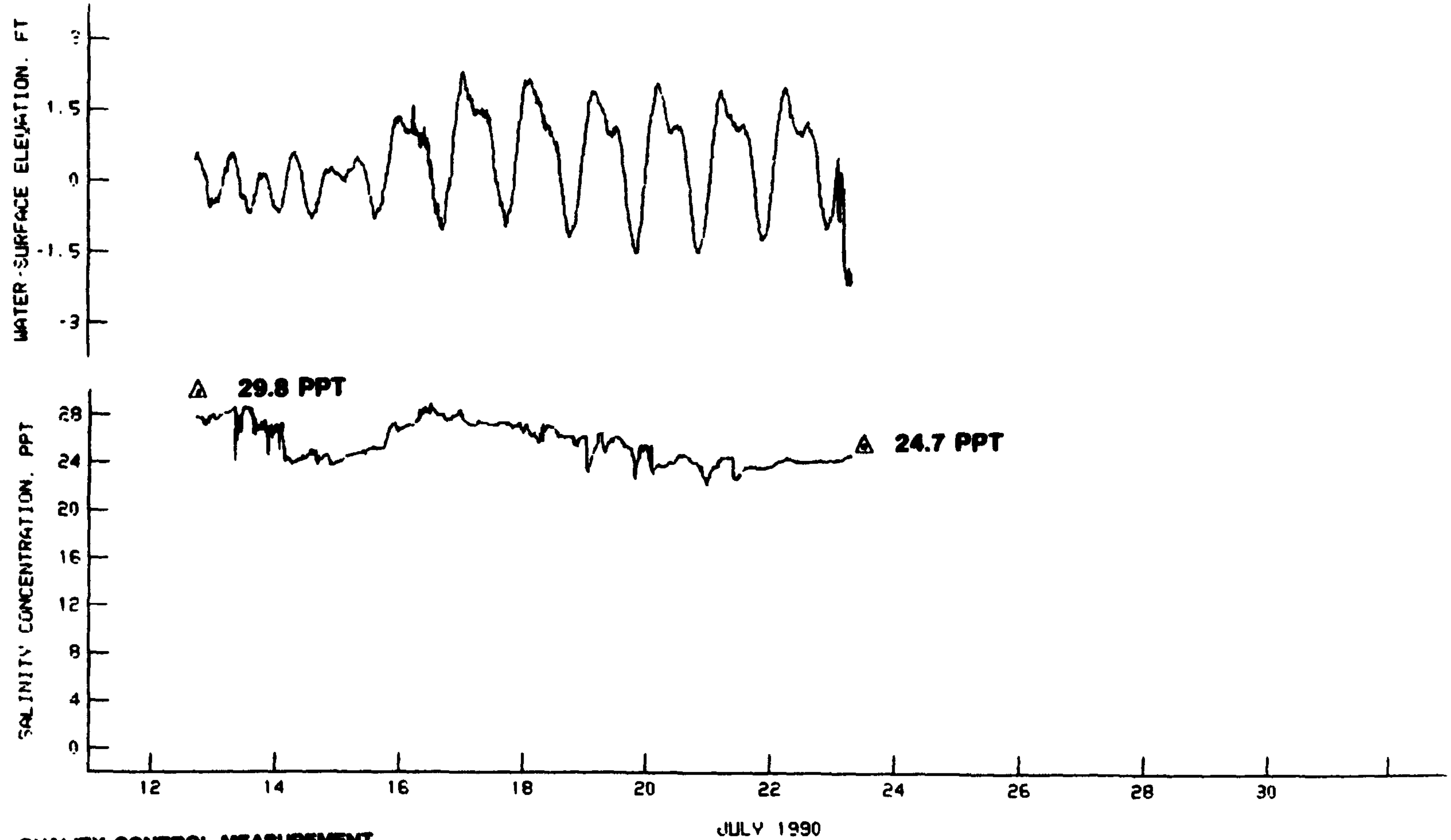
Δ QUALITY CONTROL MEASUREMENT

CURRENT SPEED AND SALINITY
AT STA S15.1, THREE-QUARTER DEPTH
13 - 30 DECEMBER 1990



▲ QUALITY CONTROL MEASUREMENT

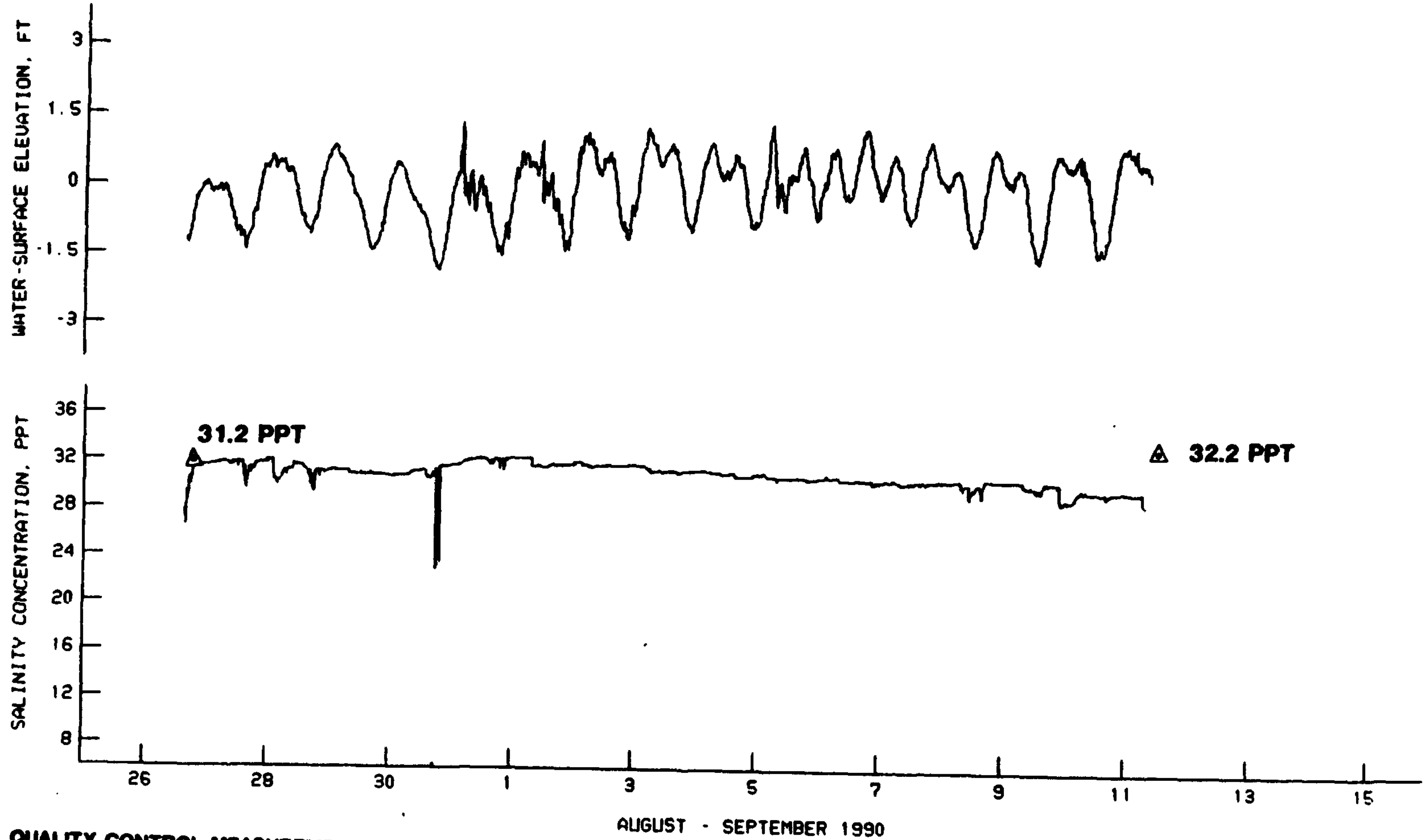
CURRENT SPEED AND SALINITY
AT STA S15.1, THREE-QUARTER DEPTH
31 DECEMBER 1990 - 16 JANUARY 1991



▲ QUALITY CONTROL MEASUREMENT

*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION
AT STATION S1.0, 12-22 JULY 1990

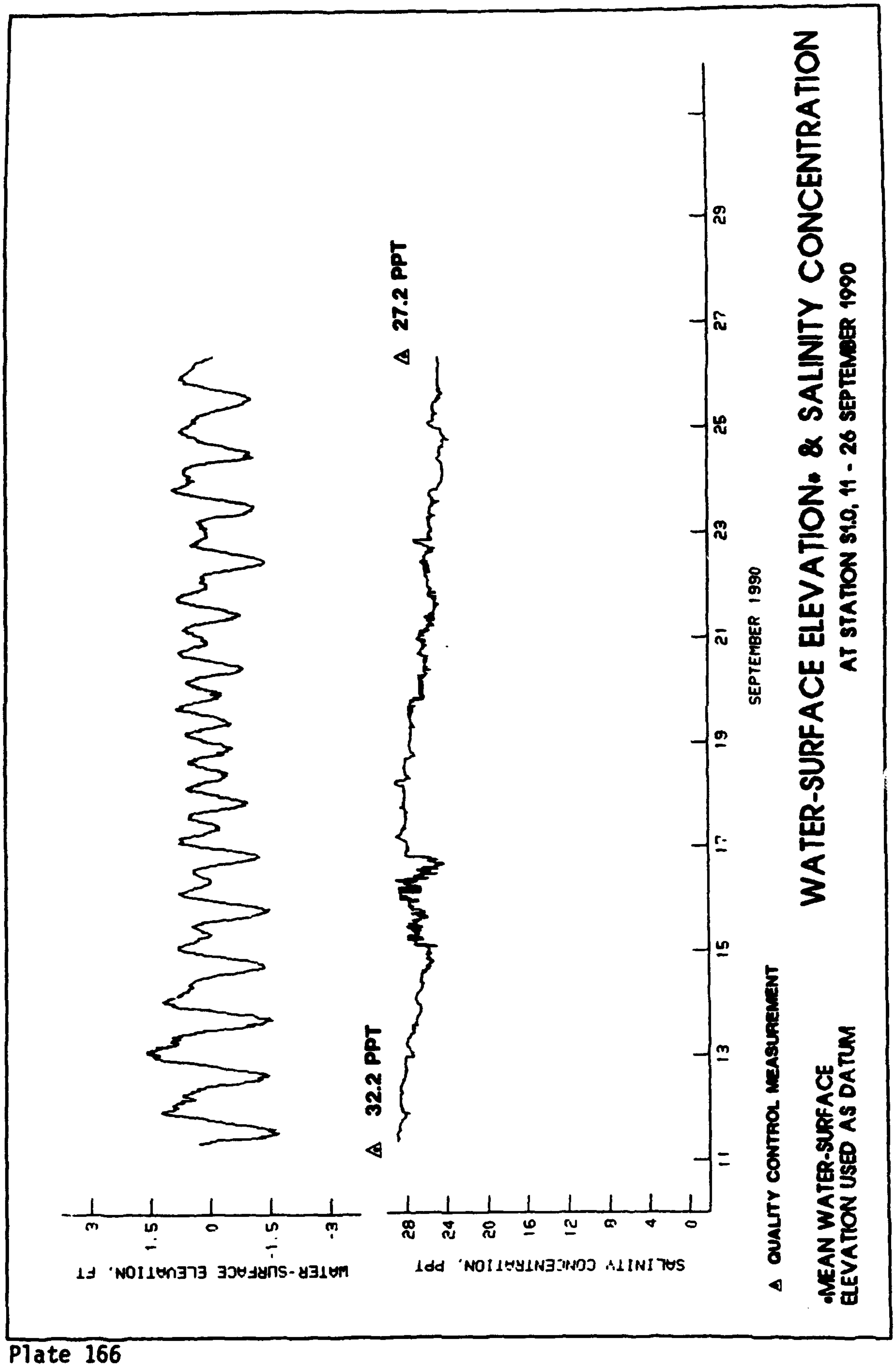


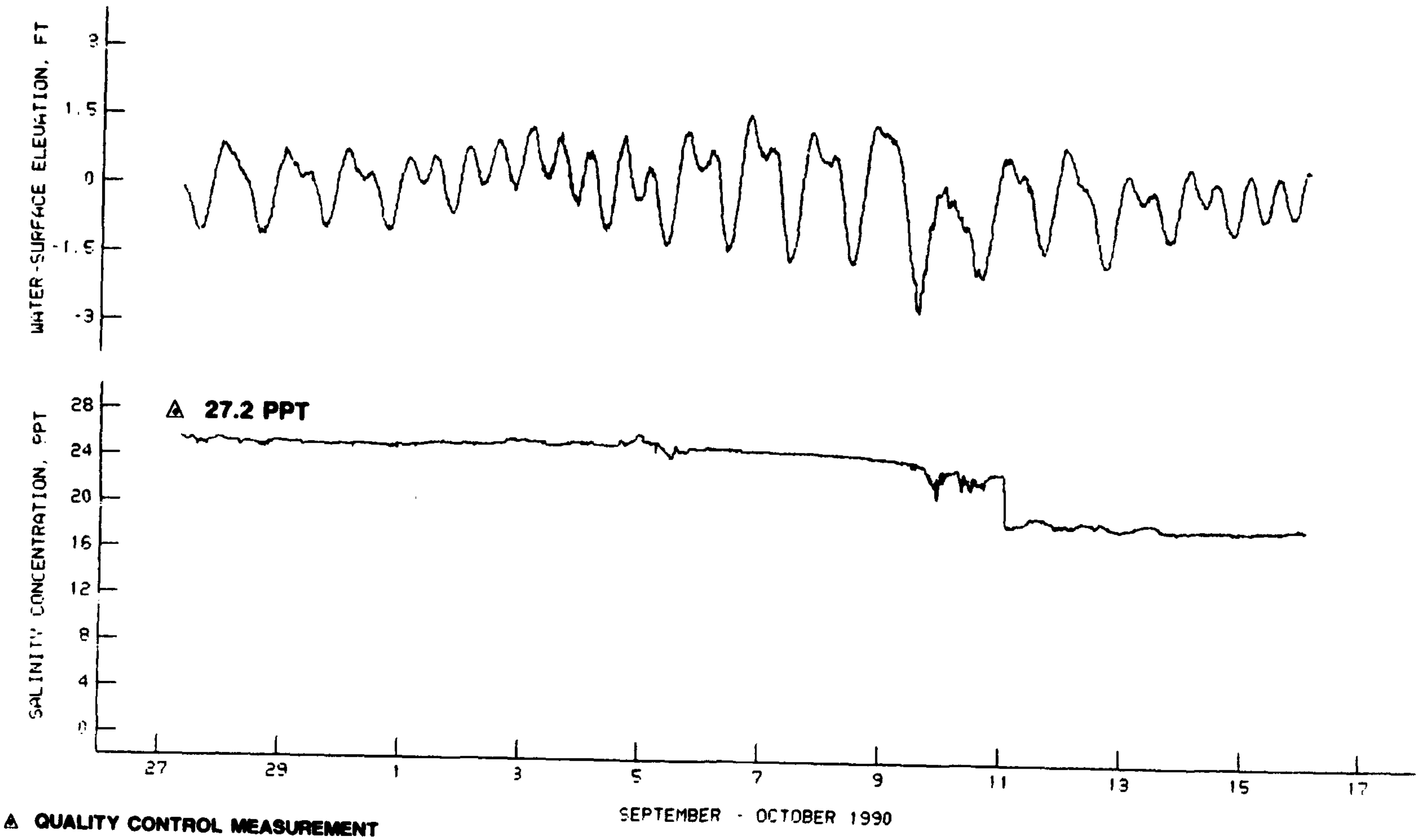
▲ QUALITY CONTROL MEASUREMENT

•MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION• & SALINITY CONCENTRATION

AT STATION S1.0, 26 AUGUST–11 SEPTEMBER 1990

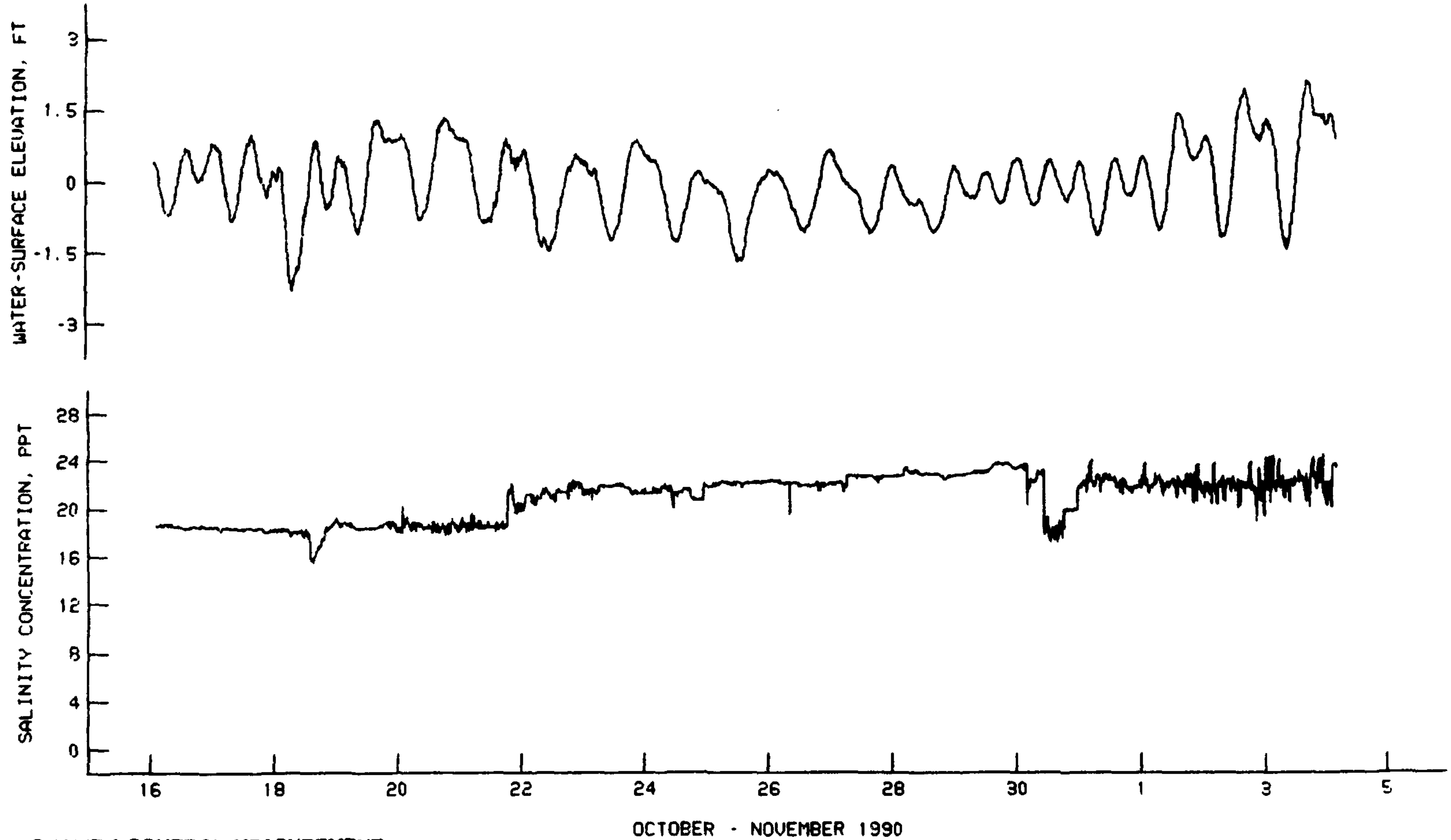

WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION
AT STATION S1.0, 11 - 26 SEPTEMBER 1990
WATER-SURFACE ELEVATION, FT
3
1.5
0
-1.5
-3
SALINITY CONCENTRATION, PPT
28
24
20
16
12
8
4
0
32.2 PPT
27.2 PPT
11
13
15
17
19
21
23
25
27
29
SEPTEMBER 1990
QUALITY CONTROL MEASUREMENT
*MEAN WATER-SURFACE
ELEVATION USED AS DATUM



▲ QUALITY CONTROL MEASUREMENT

*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION
AT STATION S1.0, 27 SEPTEMBER - 16 OCTOBER 1990

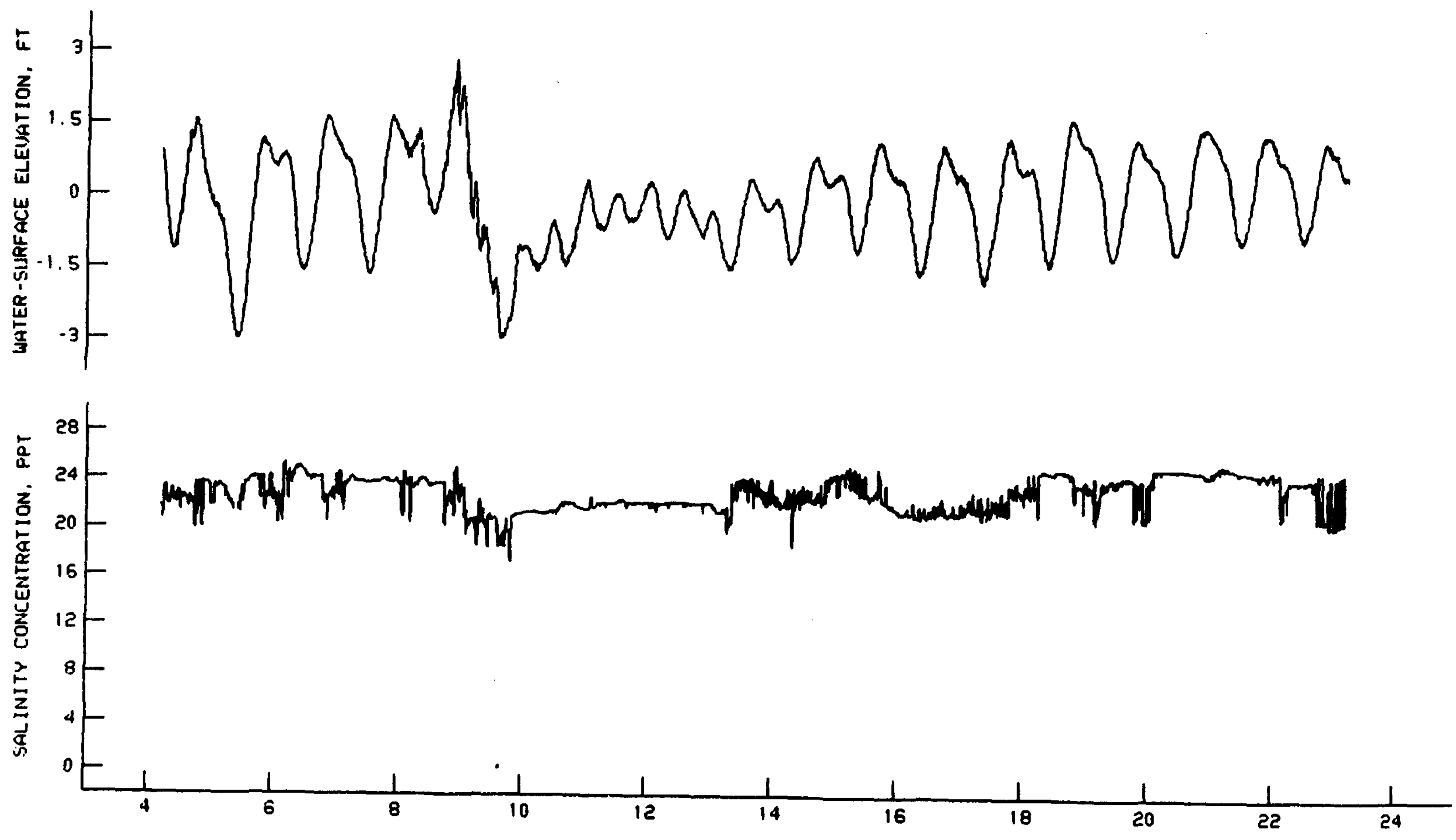


△ QUALITY CONTROL MEASUREMENT

*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION

AT STATION S1.0, 16 OCTOBER - 4 NOVEMBER 1990

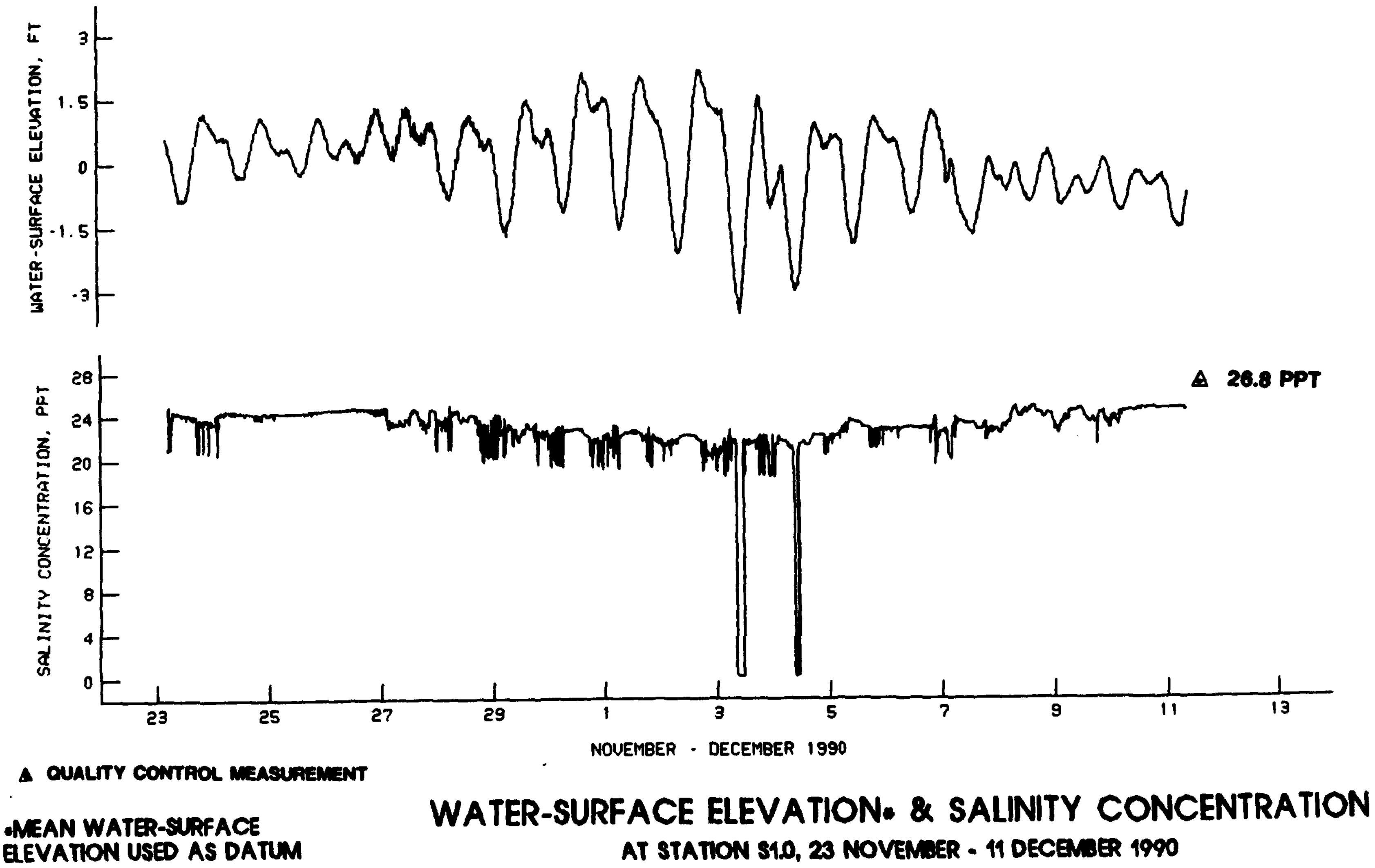


▲ QUALITY CONTROL MEASUREMENT

*MEAN WATER-SURFACE ELEVATION USED AS DATUM

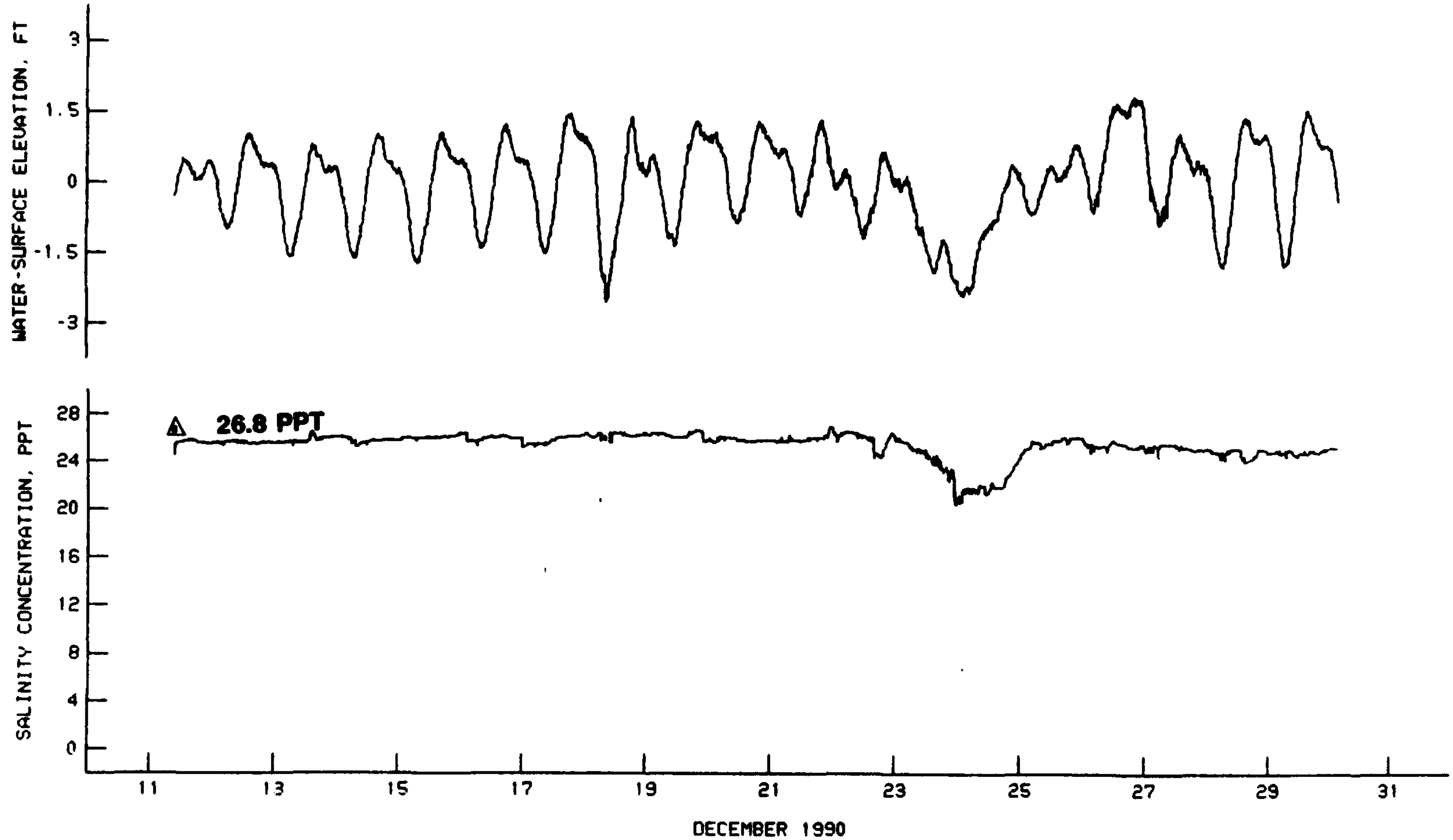
WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION

AT STATION S1.0, 4 - 23 NOVEMBER 1990



WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION

AT STATION S1.0, 23 NOVEMBER - 11 DECEMBER 1990

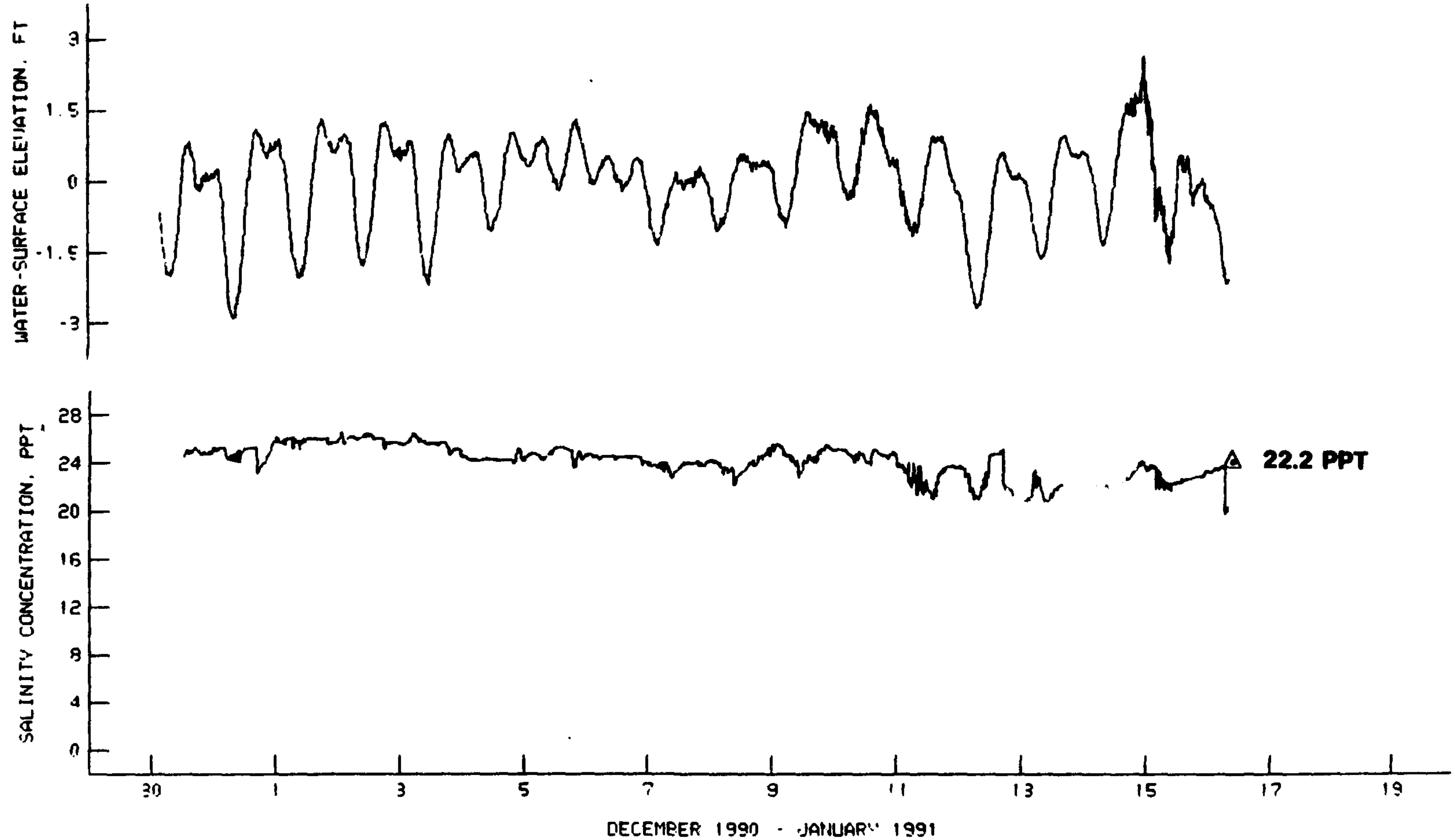


△ QUALITY CONTROL MEASUREMENT

•MEAN WATER-SURFACE
ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION• & SALINITY CONCENTRATION

AT STATION S1.0, 11 - 30 DECEMBER 1990

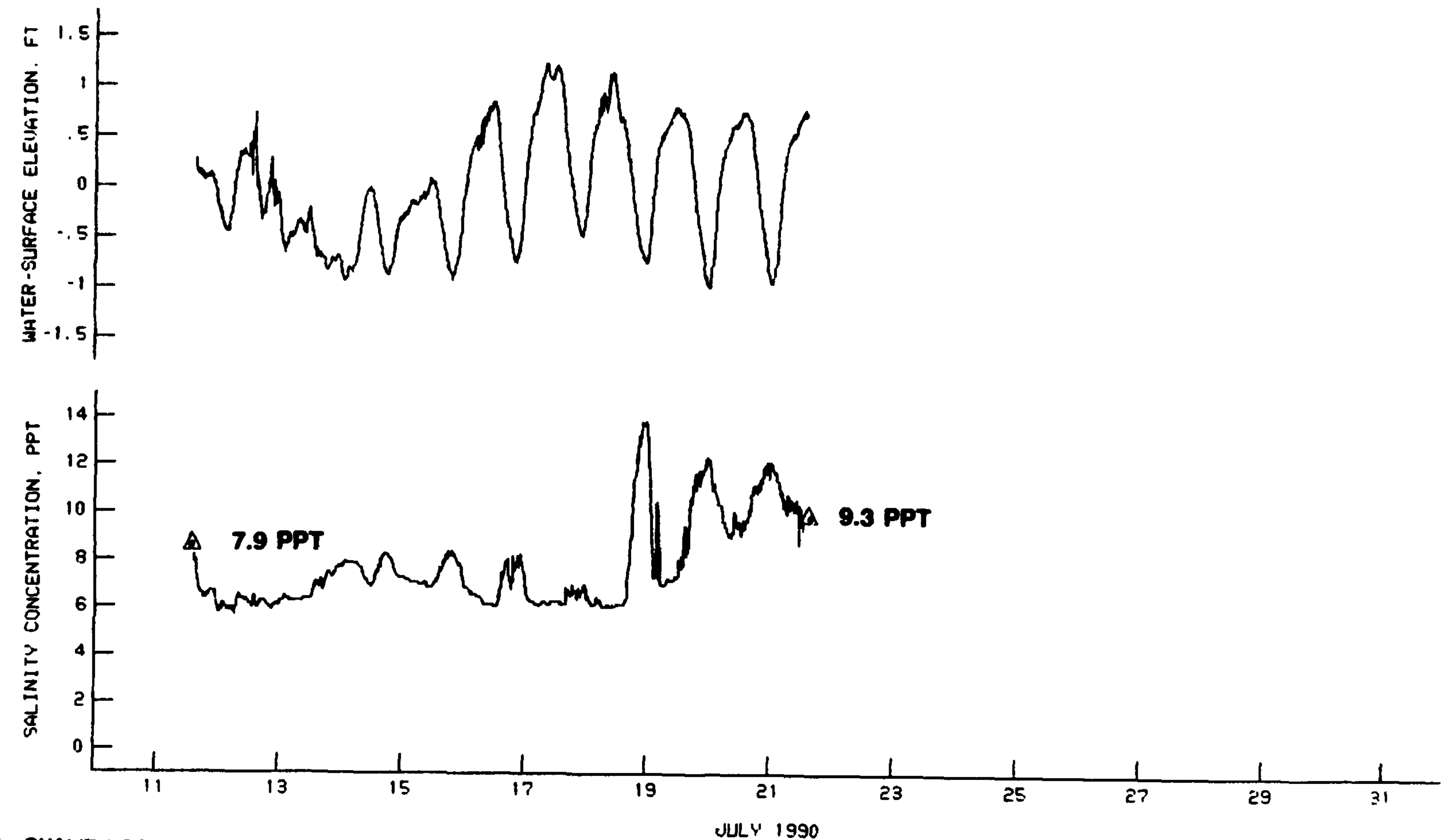


▲ QUALITY CONTROL MEASUREMENT

•MEAN WATER-SURFACE
ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION• & SALINITY CONCENTRATION
AT STATION S1.0, 30 DECEMBER 1990 - 16 JANUARY 1991

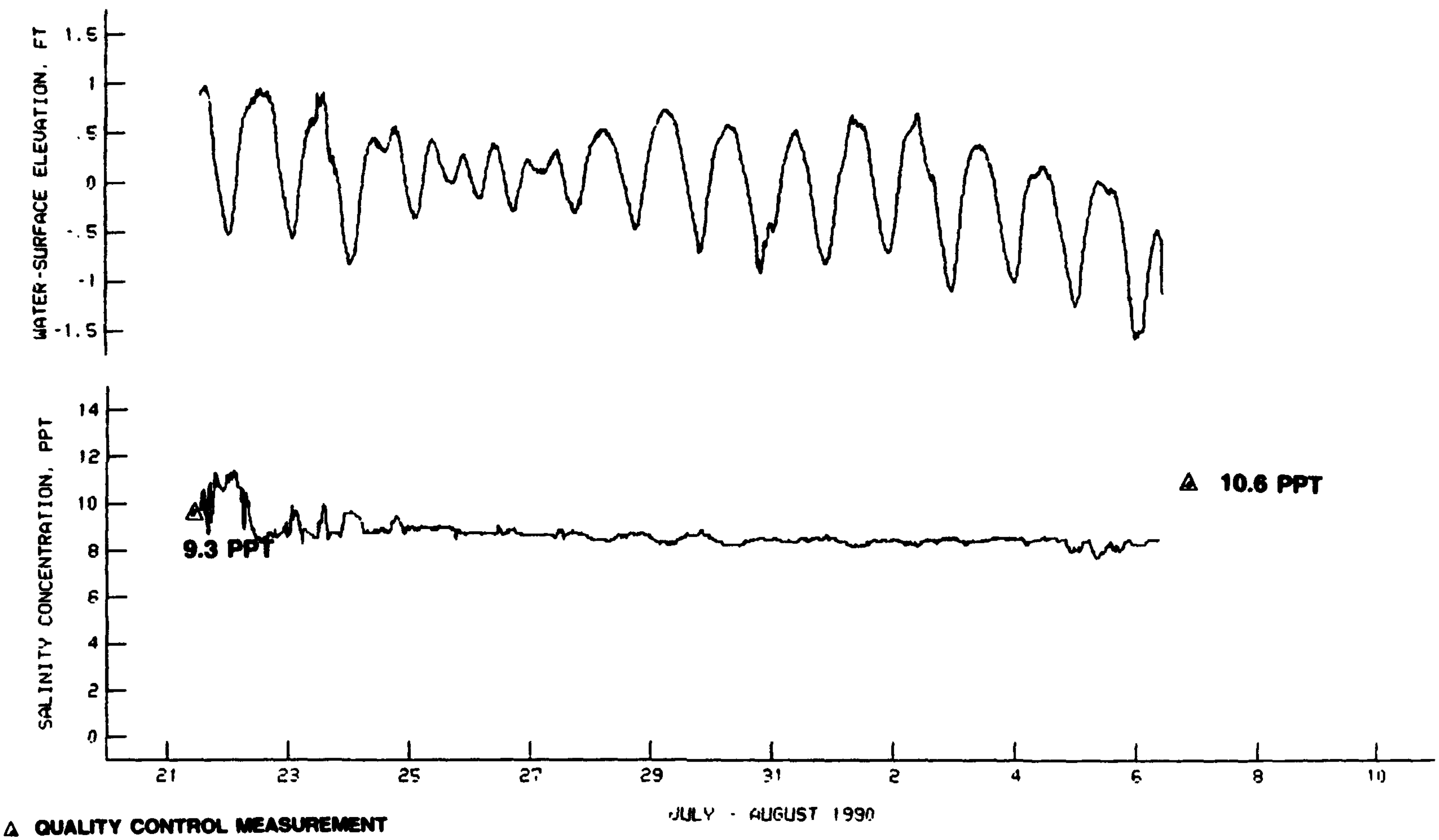
Plate 172



△ QUALITY CONTROL MEASUREMENT

*MEAN WATER-SURFACE ELEVATION USED AS DATUM

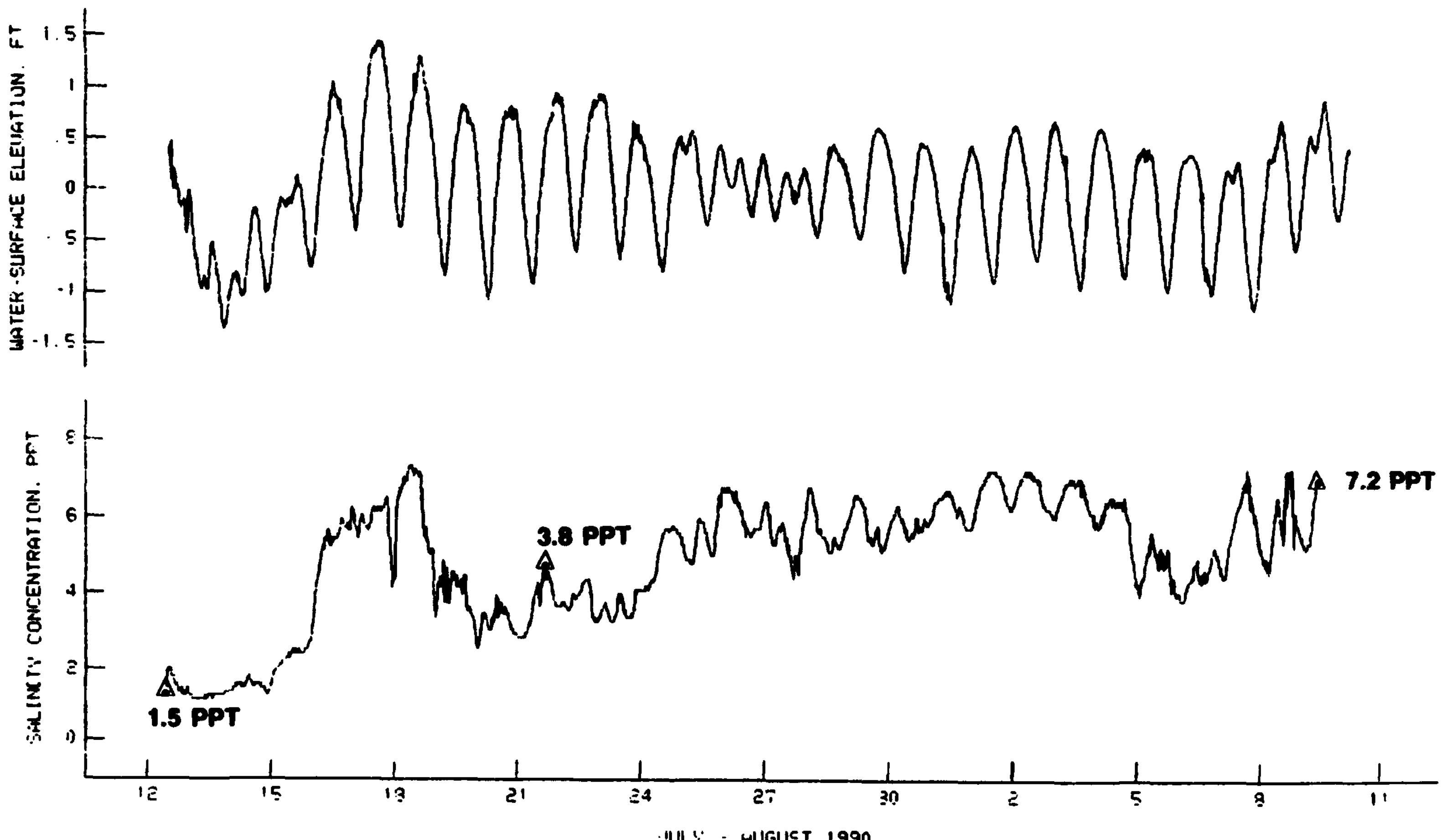
WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION
AT STATION S7.0, 11-21 JULY 1990



△ QUALITY CONTROL MEASUREMENT

•MEAN WATER-SURFACE ELEVATION USED AS DATUM

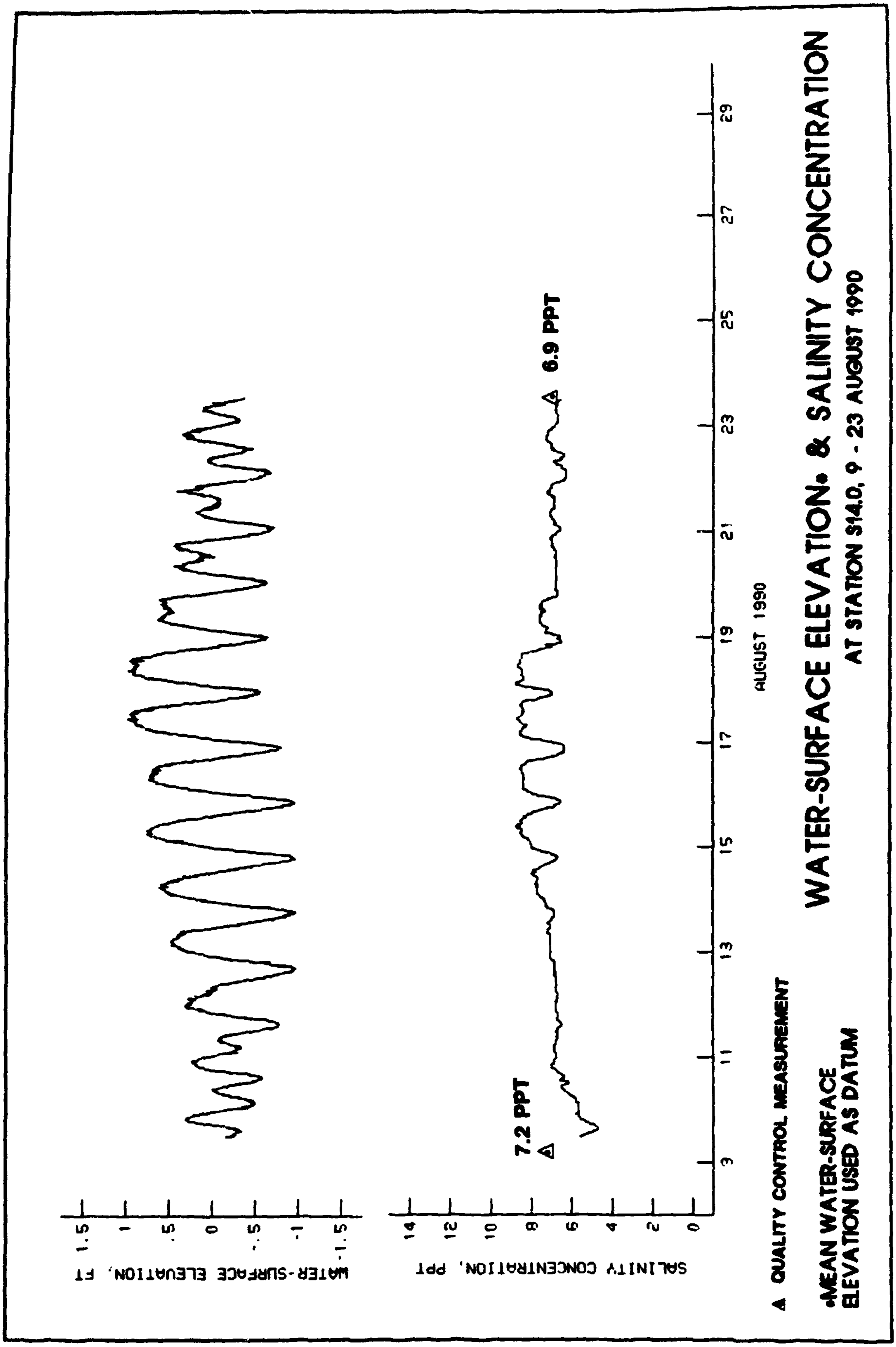
WATER-SURFACE ELEVATION• & SALINITY CONCENTRATION
AT STATION S7.0, 21 JULY - 8 AUGUST 1990



▲ QUALITY CONTROL MEASUREMENT

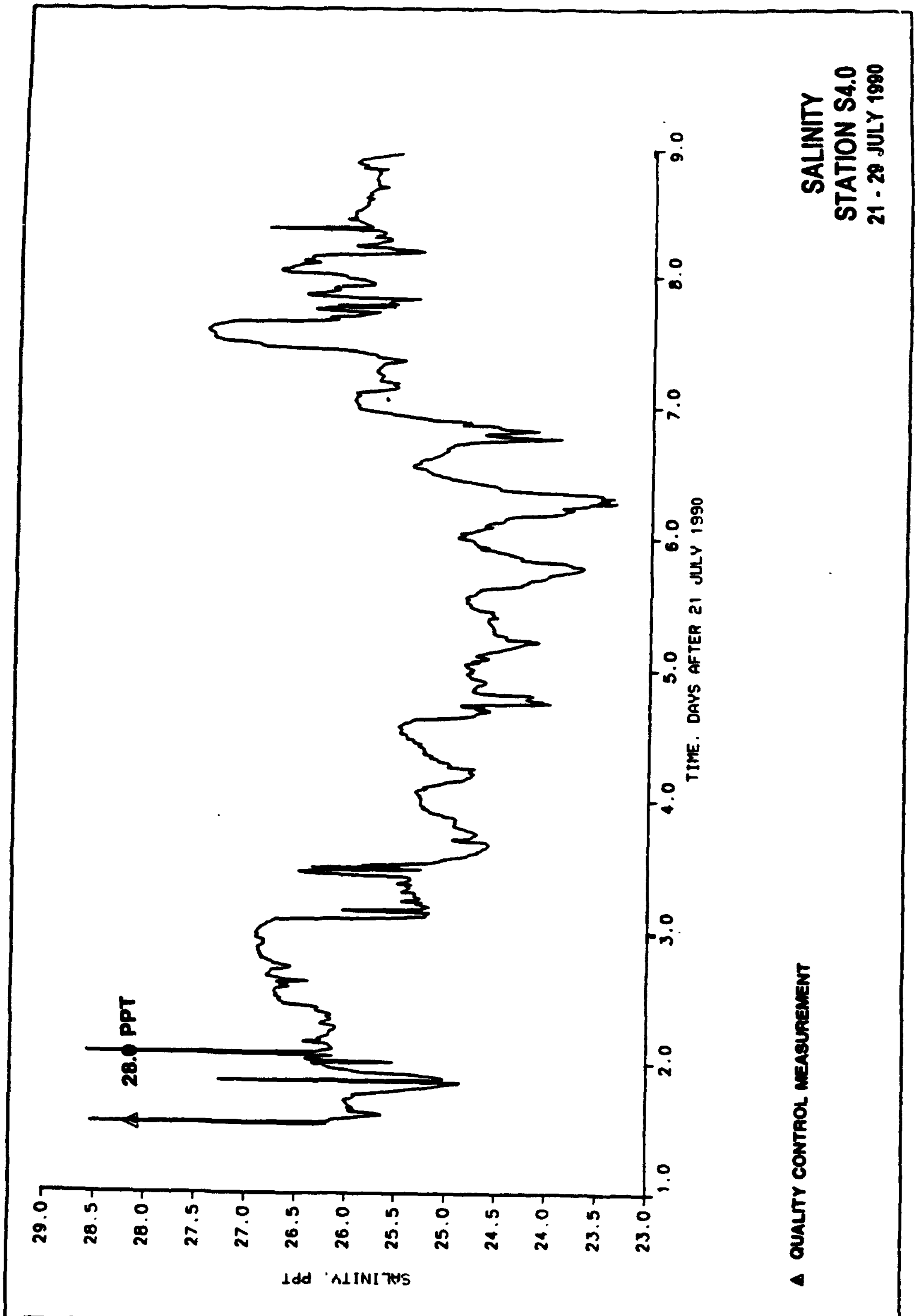
*MEAN WATER-SURFACE ELEVATION USED AS DATUM

WATER-SURFACE ELEVATION* & SALINITY CONCENTRATION
AT STATION S14.0, 12 JULY - 9 AUGUST 1990



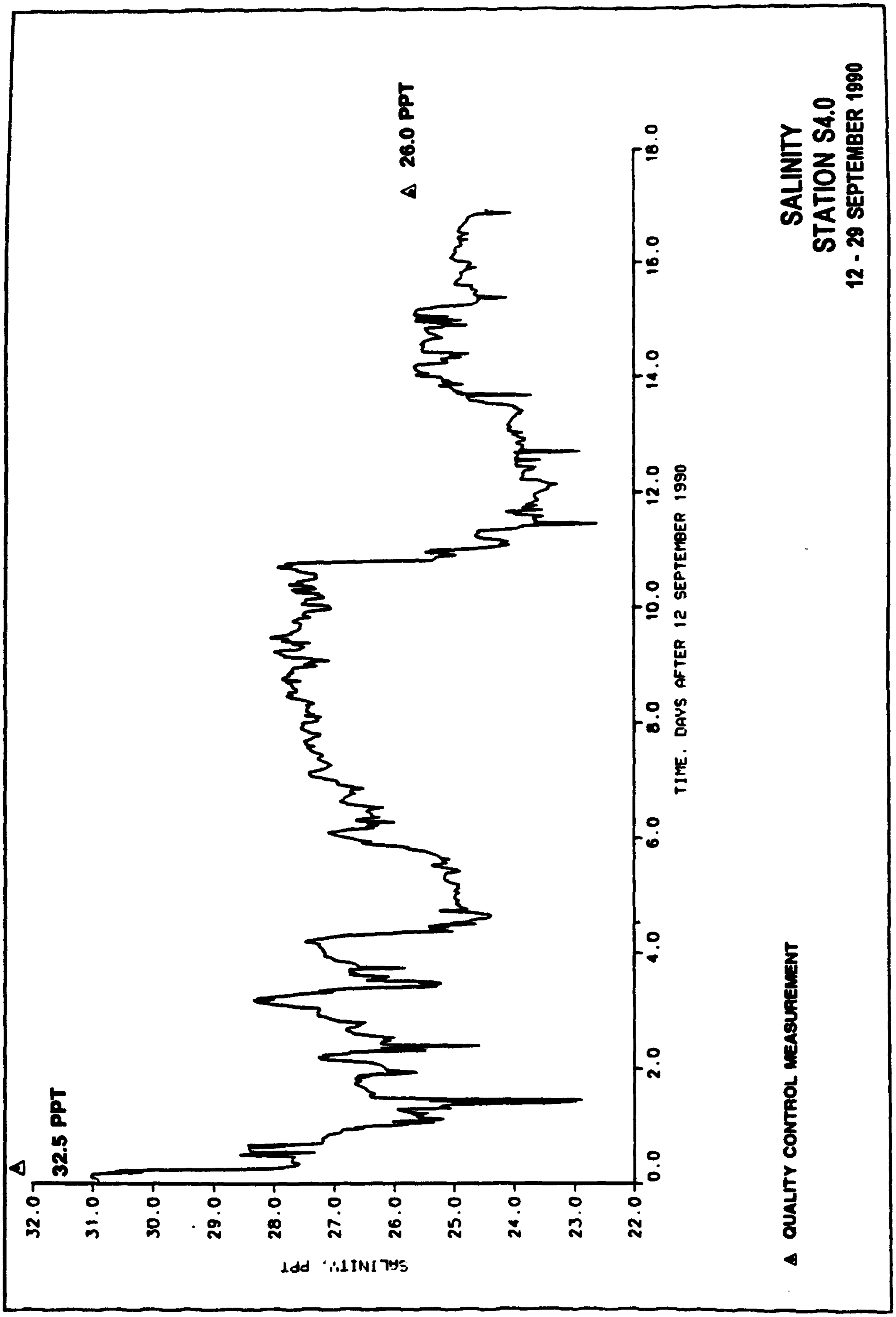
WATER-SURFACE ELEVATION• & SALINITY CONCENTRATION
AT STATION S14.0, 9 - 23 AUGUST 1990

Plate 176



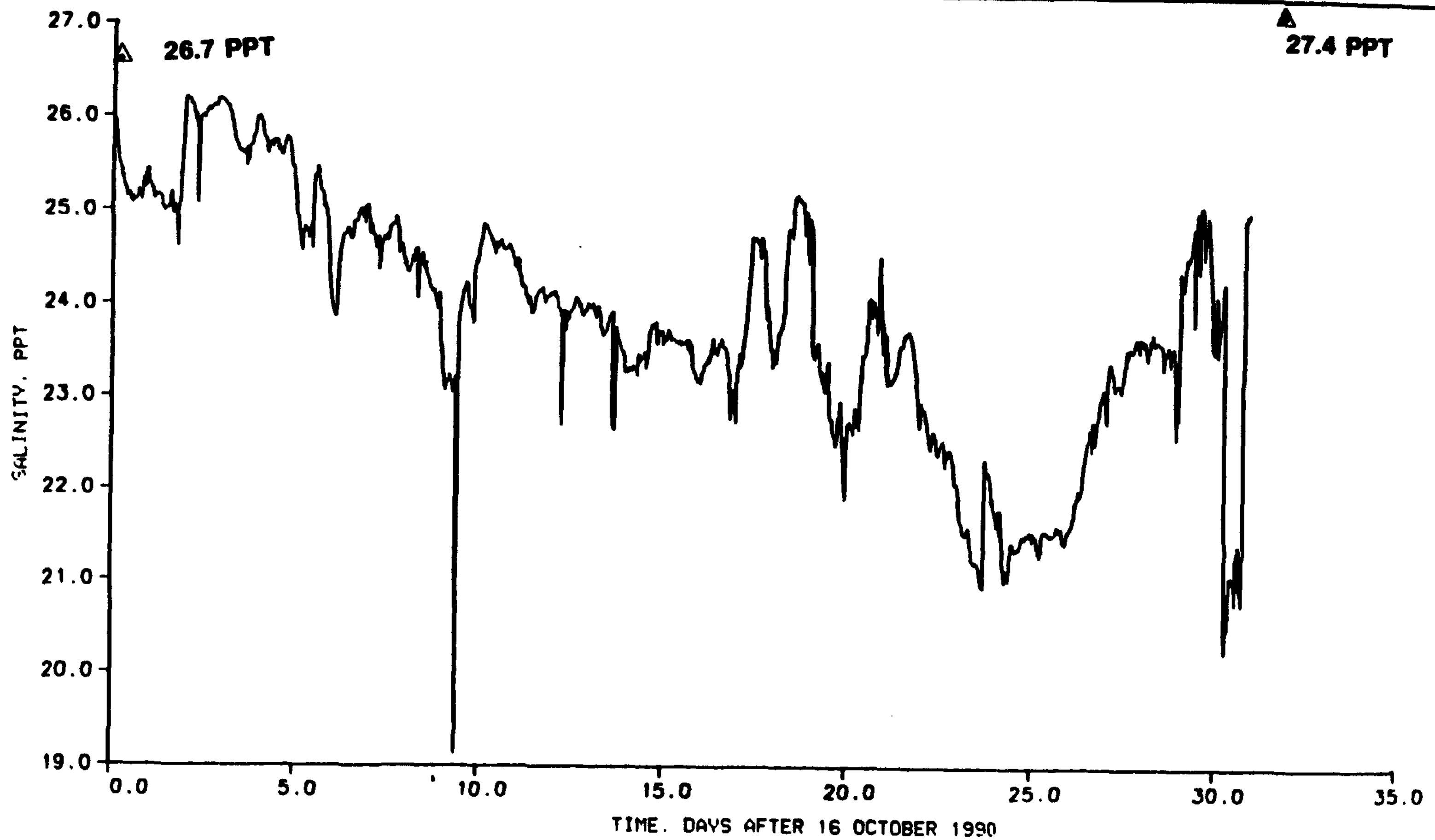
SALINITY
STATION S4.0
21 - 29 JULY 1990
SALINITY, PPT
TIME, DAYS AFTER 21 JULY 1990
28.0 PPT
QUALITY CONTROL MEASUREMENT

Plate 177



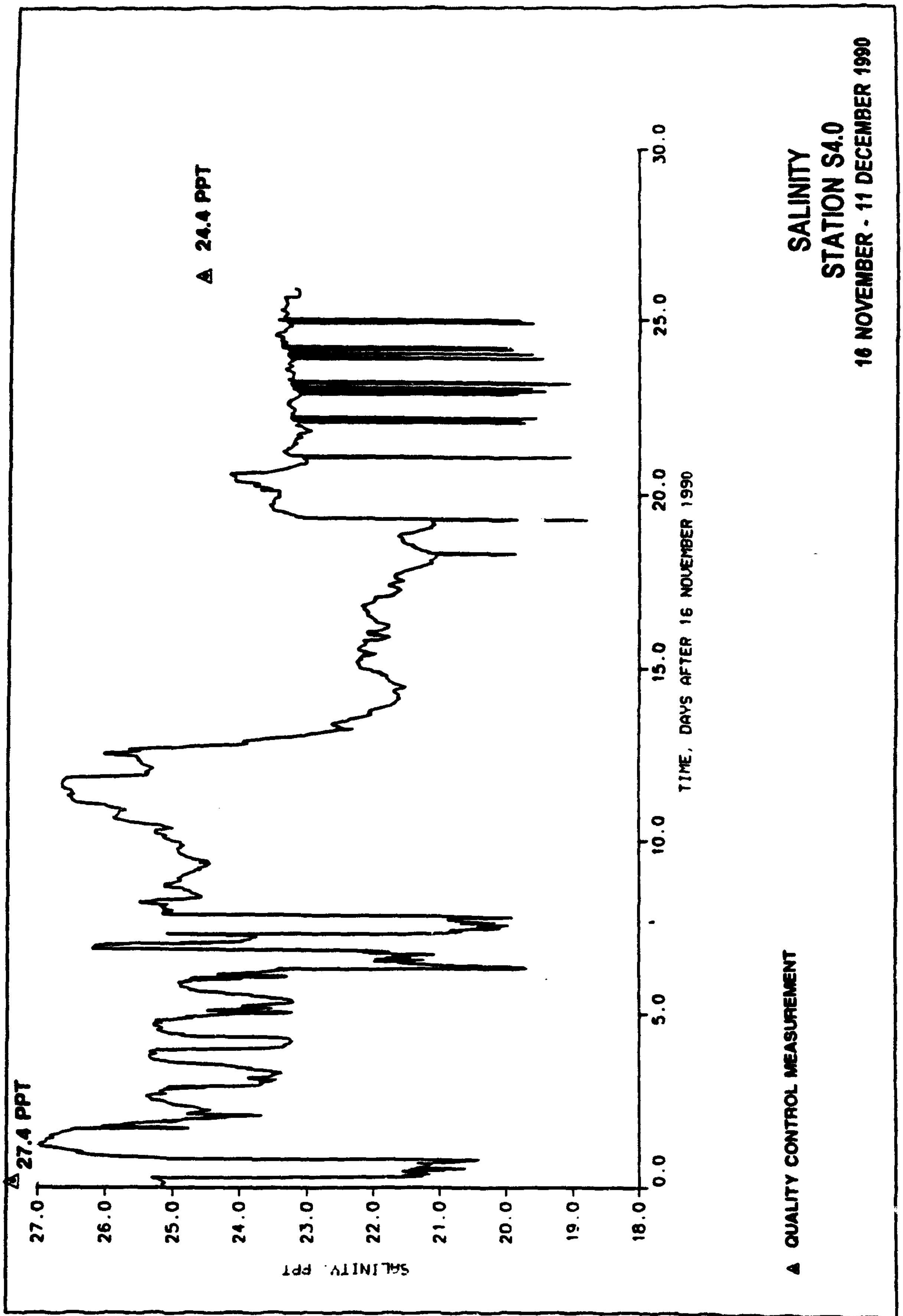
SALINITY
STATION S4.0
12 - 29 SEPTEMBER 1990
SALINITY, PPT
TIME, DAYS AFTER 12 SEPTEMBER 1990
32.0
31.0
30.0
29.0
28.0
27.0
26.0
25.0
24.0
23.0
22.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
Δ 32.5 PPT
Δ 26.0 PPT
Δ QUALITY CONTROL MEASUREMENT

Plate 178



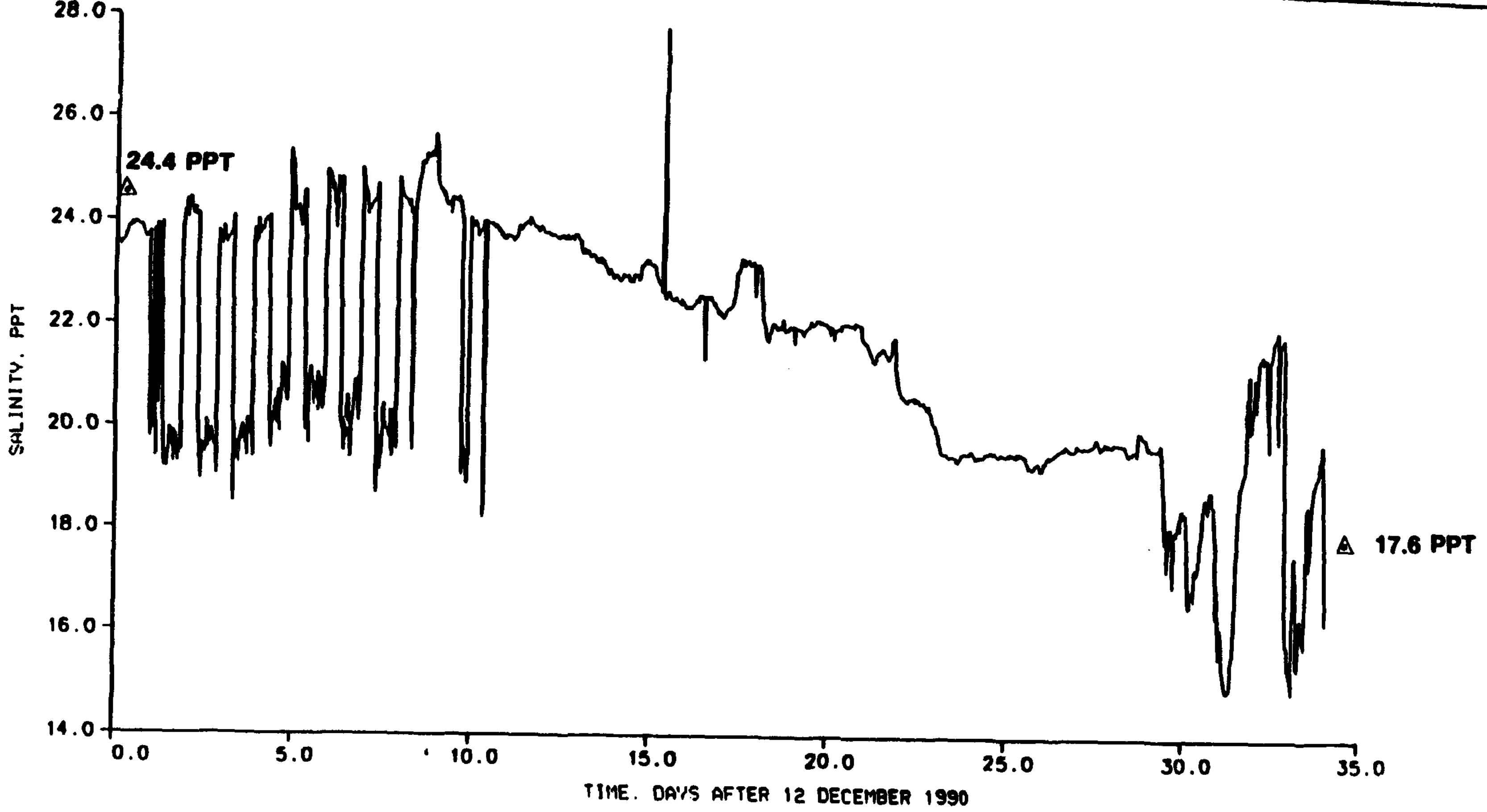
▲ QUALITY CONTROL MEASUREMENT

SALINITY
STATION S4.0
16 OCTOBER - 15 NOVEMBER 1990



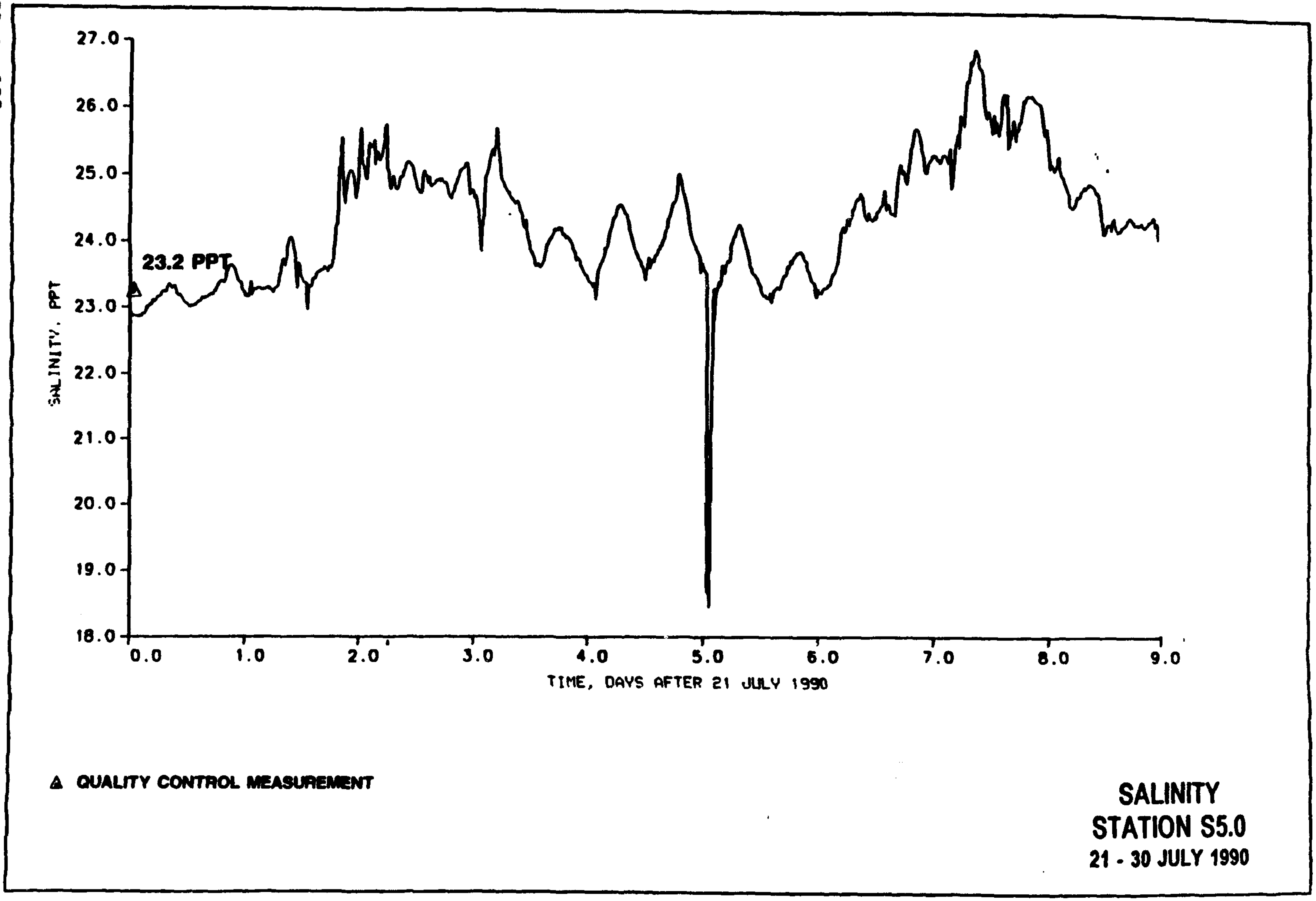
SALINITY
STATION S4.0
16 NOVEMBER - 11 DECEMBER 1990
SALINITY, PPT
TIME, DAYS AFTER 16 NOVEMBER 1990
27.0
26.0
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
27.4 PPT
24.4 PPT
Δ QUALITY CONTROL MEASUREMENT

Plate 180



▲ QUALITY CONTROL MEASUREMENT

SALINITY
STATION S4.0
12 DECEMBER 1990 - 14 JANUARY 1991



27.0
26.0
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
SALINITY, PPT
23.2 PPT
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
TIME, DAYS AFTER 21 JULY 1990
Δ QUALITY CONTROL MEASUREMENT
SALINITY
STATION S5.0
21 - 30 JULY 1990

Plate 182

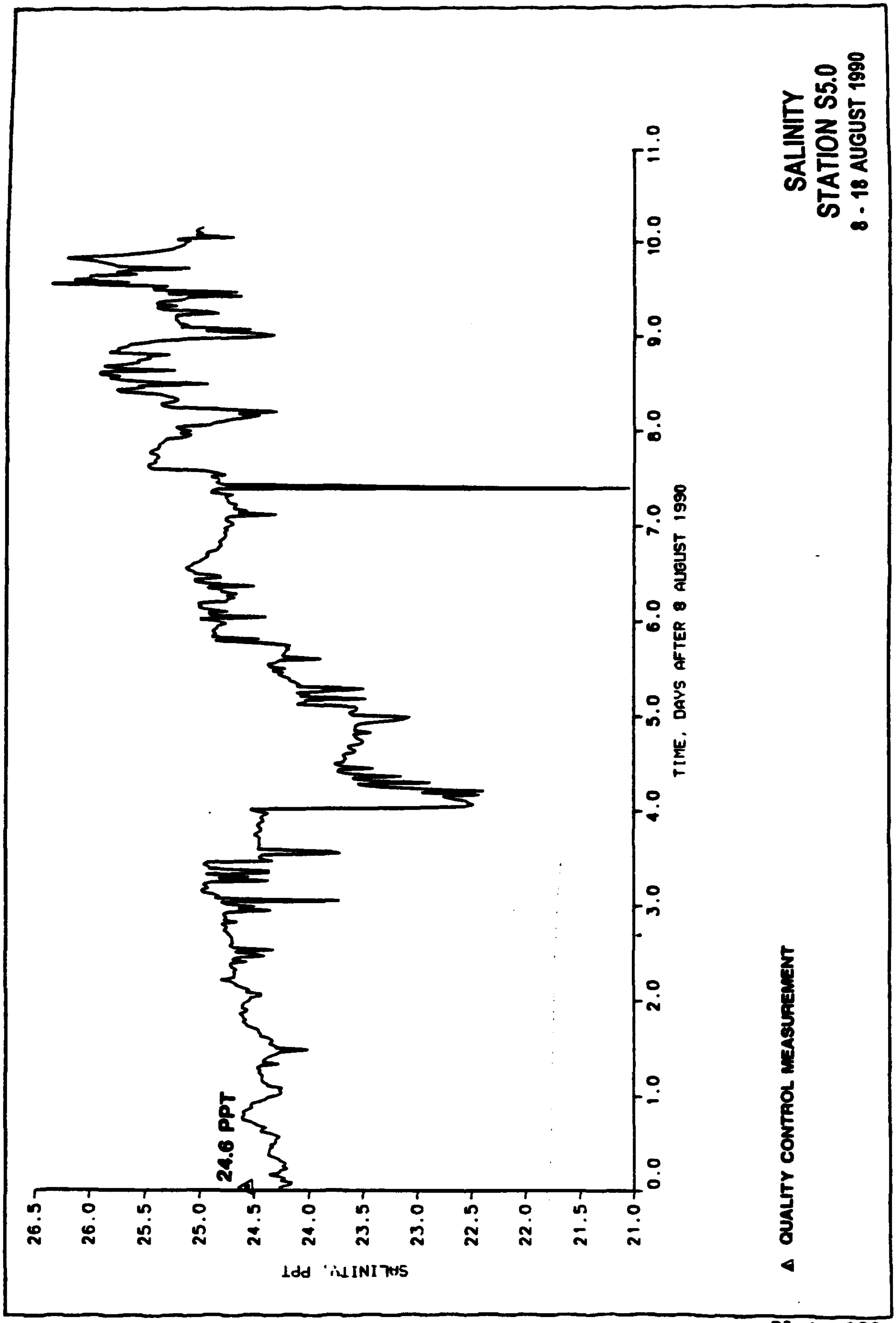
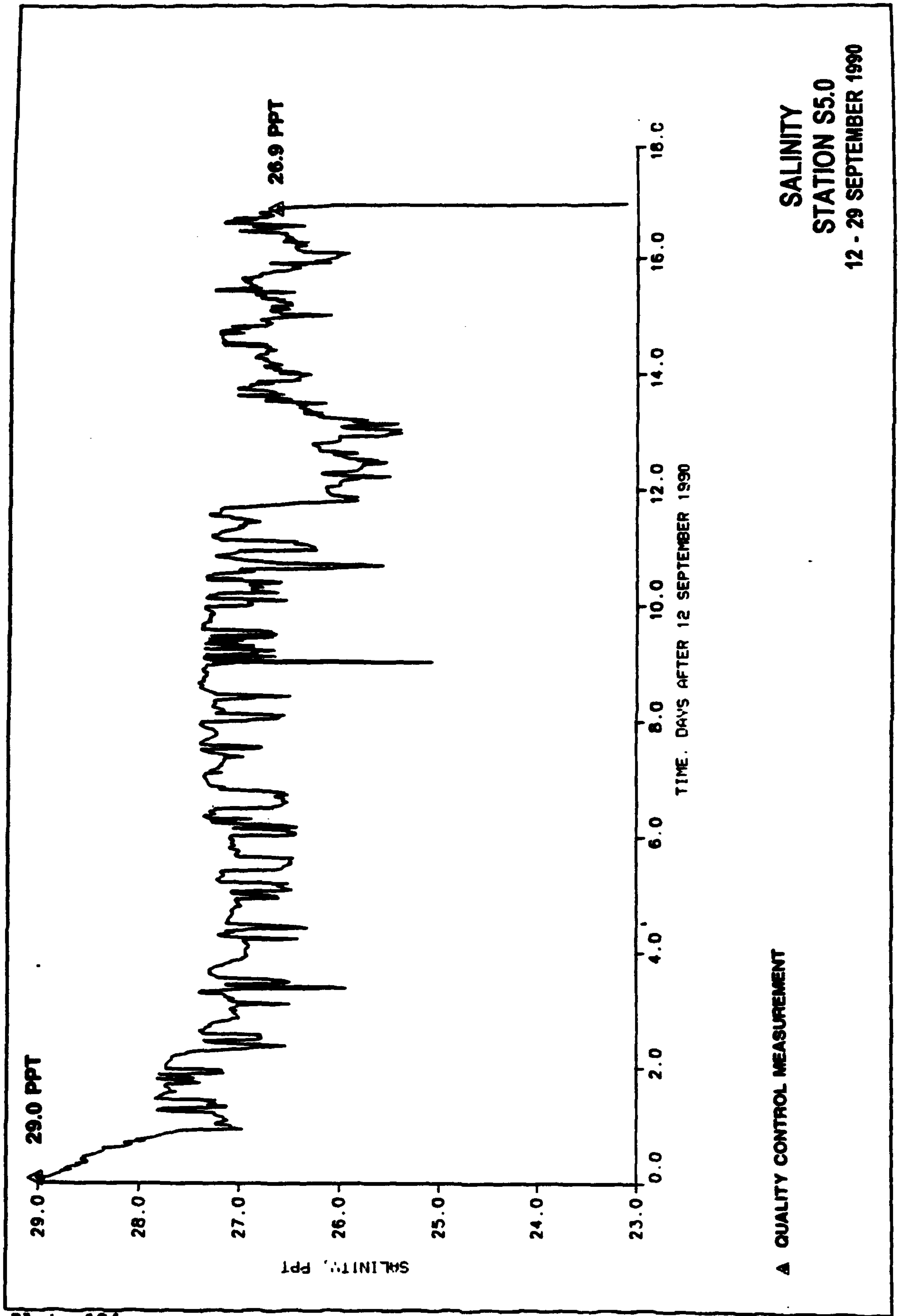
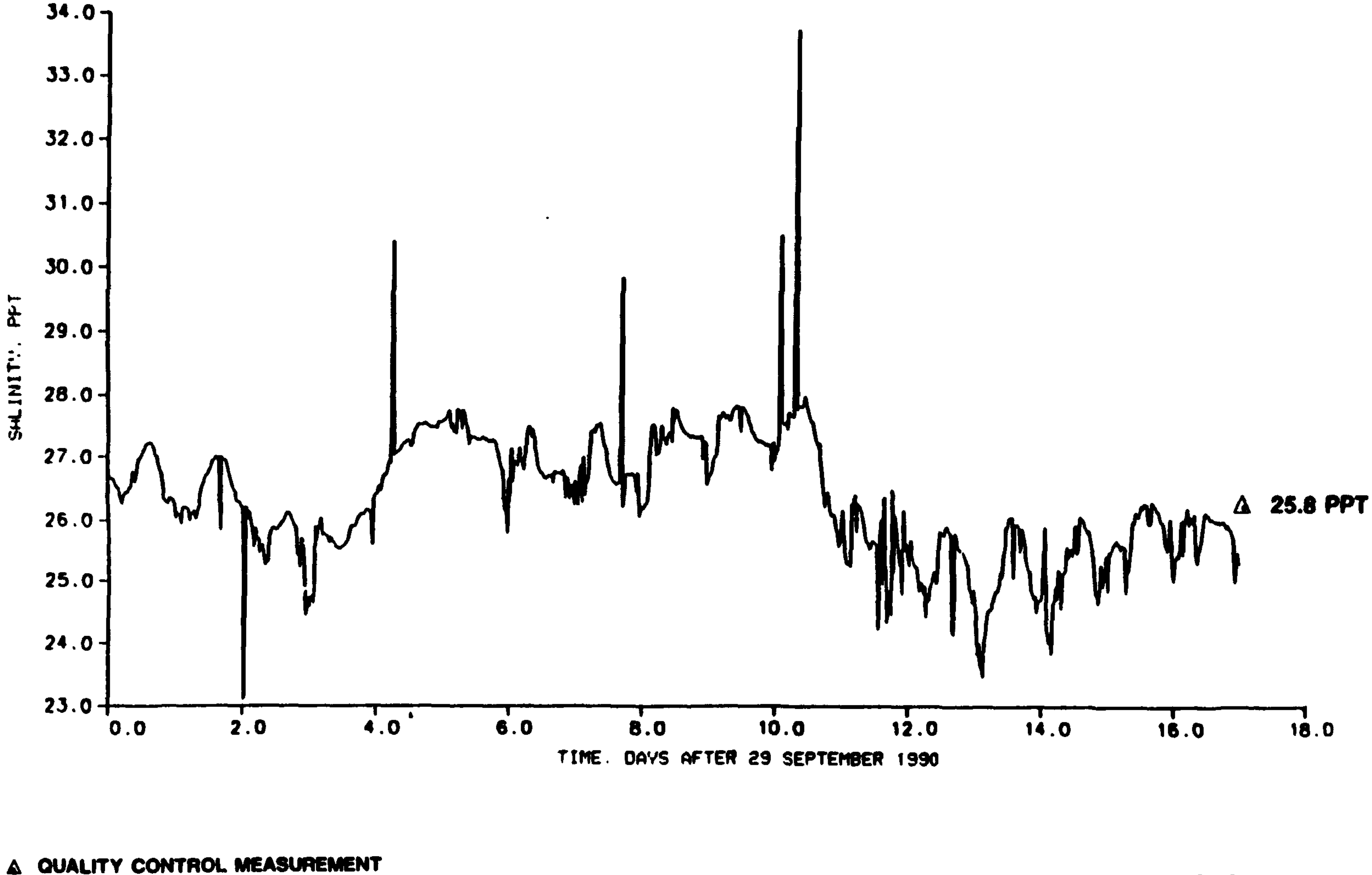

SALINITY
STATION S5.0
8 - 18 AUGUST 1990
SALINITY, PPT
TIME, DAYS AFTER 8 AUGUST 1990
24.6 PPT
Δ QUALITY CONTROL MEASUREMENT
26.5
26.0
25.5
25.0
24.5
24.0
23.5
23.0
22.5
22.0
21.5
21.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0

Plate 183



SALINITY
STATION S5.0
12 - 29 SEPTEMBER 1990
29.0 PPT
26.9 PPT
SALINITY, PPT
29.0
28.0
27.0
26.0
25.0
24.0
23.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
TIME, DAYS AFTER 12 SEPTEMBER 1990
△ QUALITY CONTROL MEASUREMENT

Plate 184



SALINITY
STATION S5.0
29 SEPTEMBER - 16 OCTOBER 1990

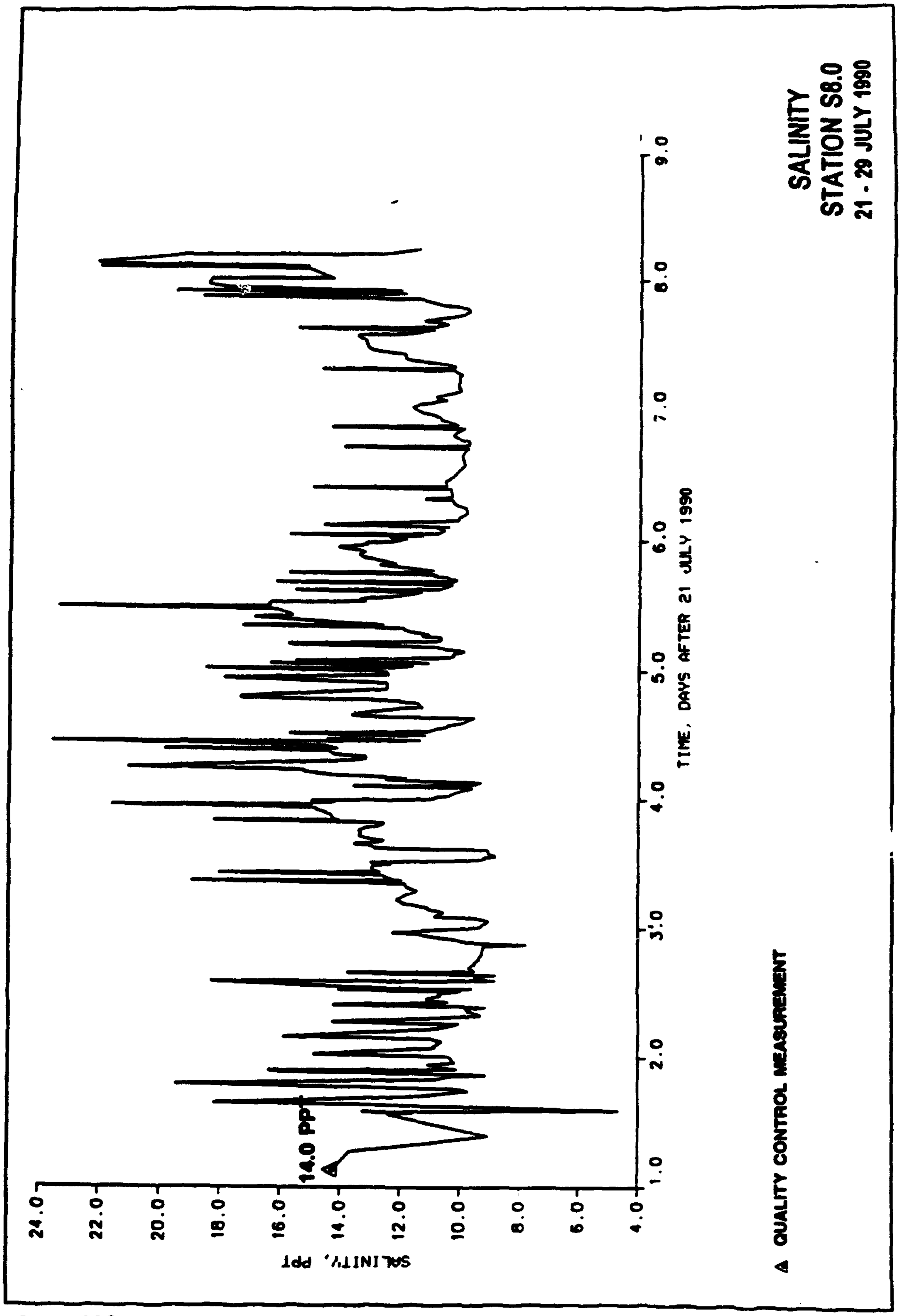
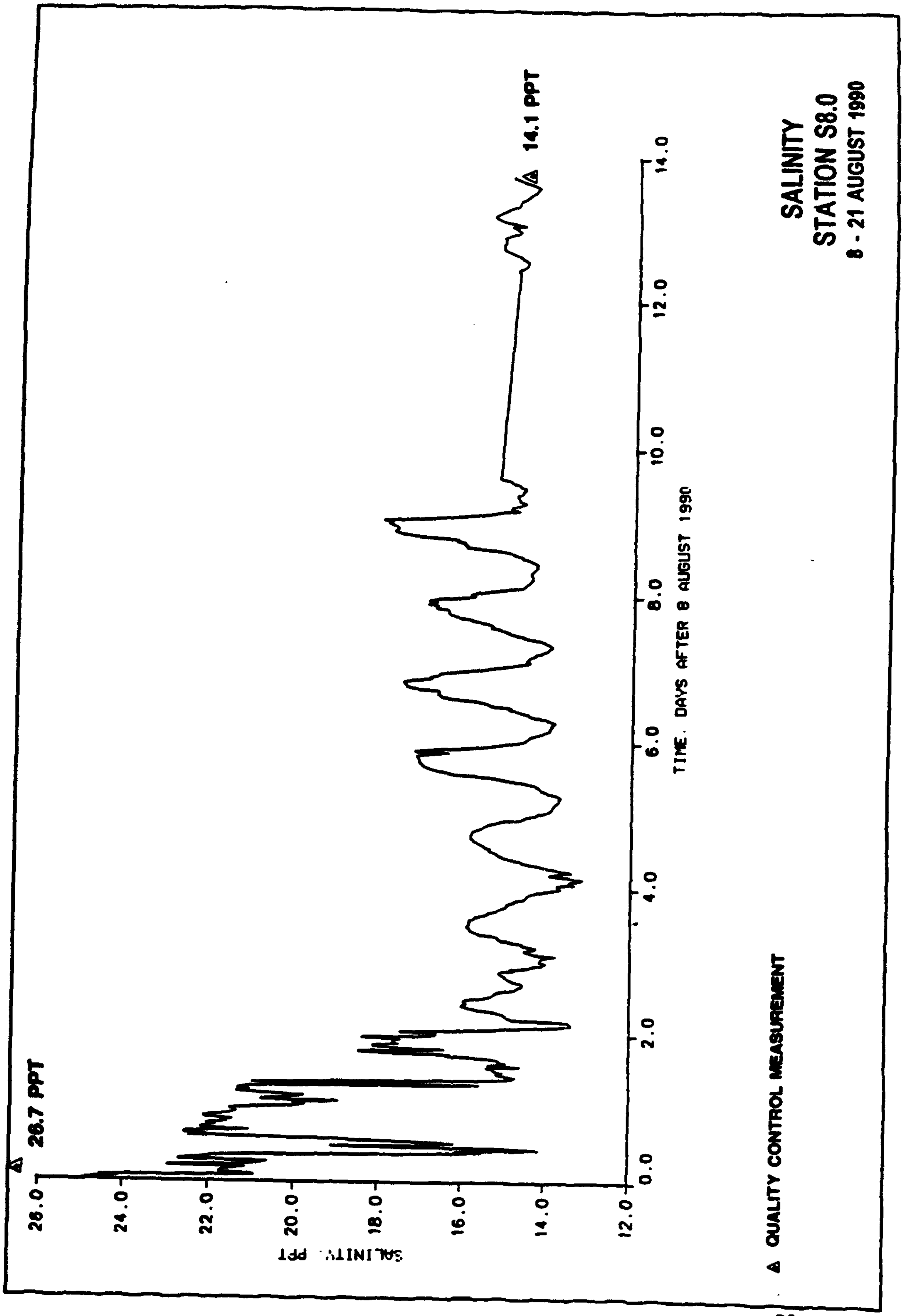

SALINITY
STATION S8.0
21 - 29 JULY 1990
SALINITY, PPT
TIME, DAYS AFTER 21 JULY 1990
14.0 PPT
△ QUALITY CONTROL MEASUREMENT
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0

Plate 186


SALINITY
STATION S8.0
8 - 21 AUGUST 1990
26.7 PPT
14.1 PPT
SALINITY, PPT
TIME, DAYS AFTER 8 AUGUST 1990
Δ QUALITY CONTROL MEASUREMENT
12.0
14.0
16.0
18.0
20.0
22.0
24.0
26.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0

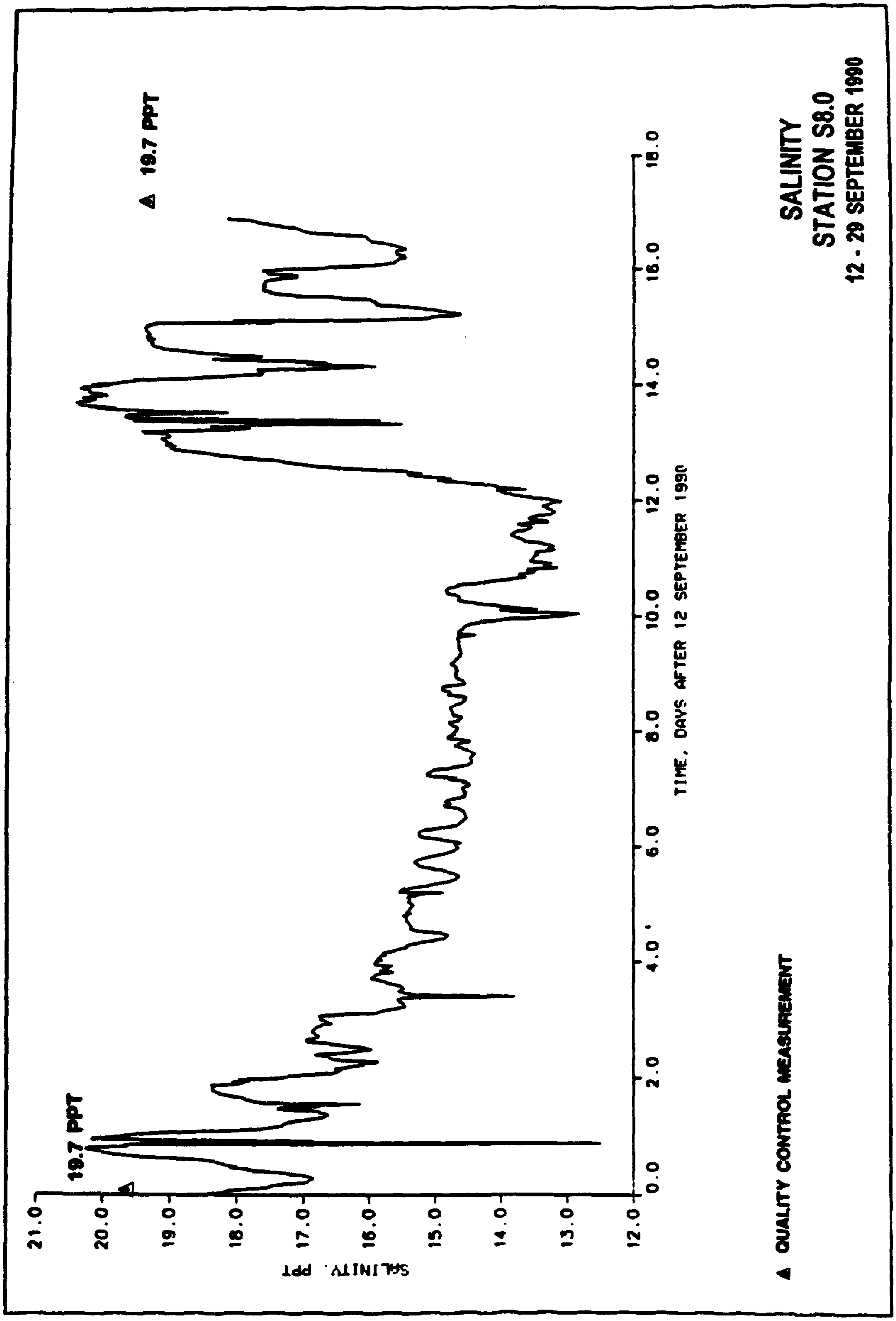

SALINITY
STATION S8.0
12 - 29 SEPTEMBER 1990
SALINITY, PPT
21.0
20.0
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
TIME, DAYS AFTER 12 SEPTEMBER 1990
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
19.7 PPT
19.7 PPT
▲ QUALITY CONTROL MEASUREMENT

Plate 188

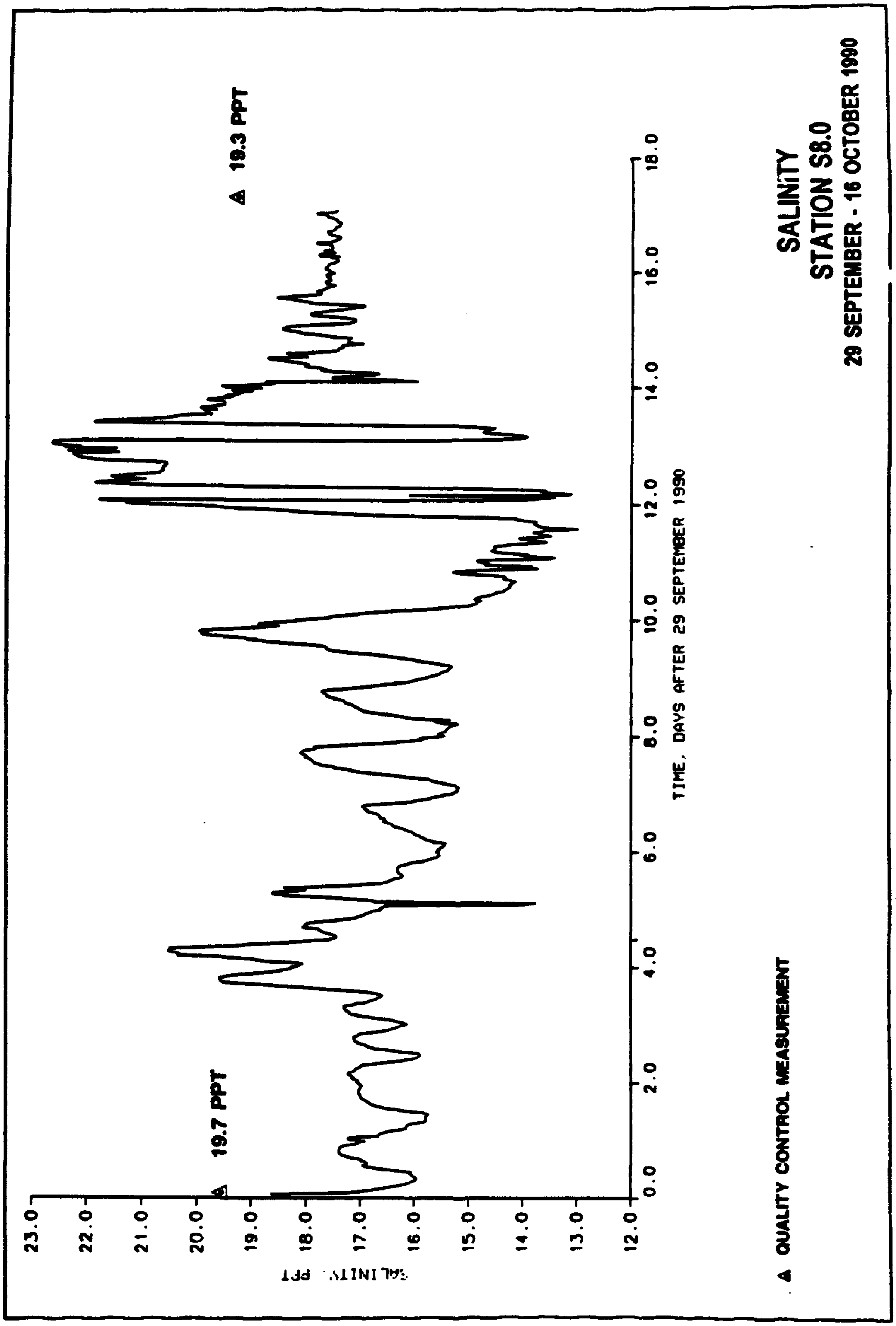

SALINITY
STATION S8.0
29 SEPTEMBER - 16 OCTOBER 1990
19.7 PPT
19.3 PPT
SALINITY, PPT
23.0
22.0
21.0
20.0
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
TIME, DAYS AFTER 29 SEPTEMBER 1990
QUALITY CONTROL MEASUREMENT

Plate 189

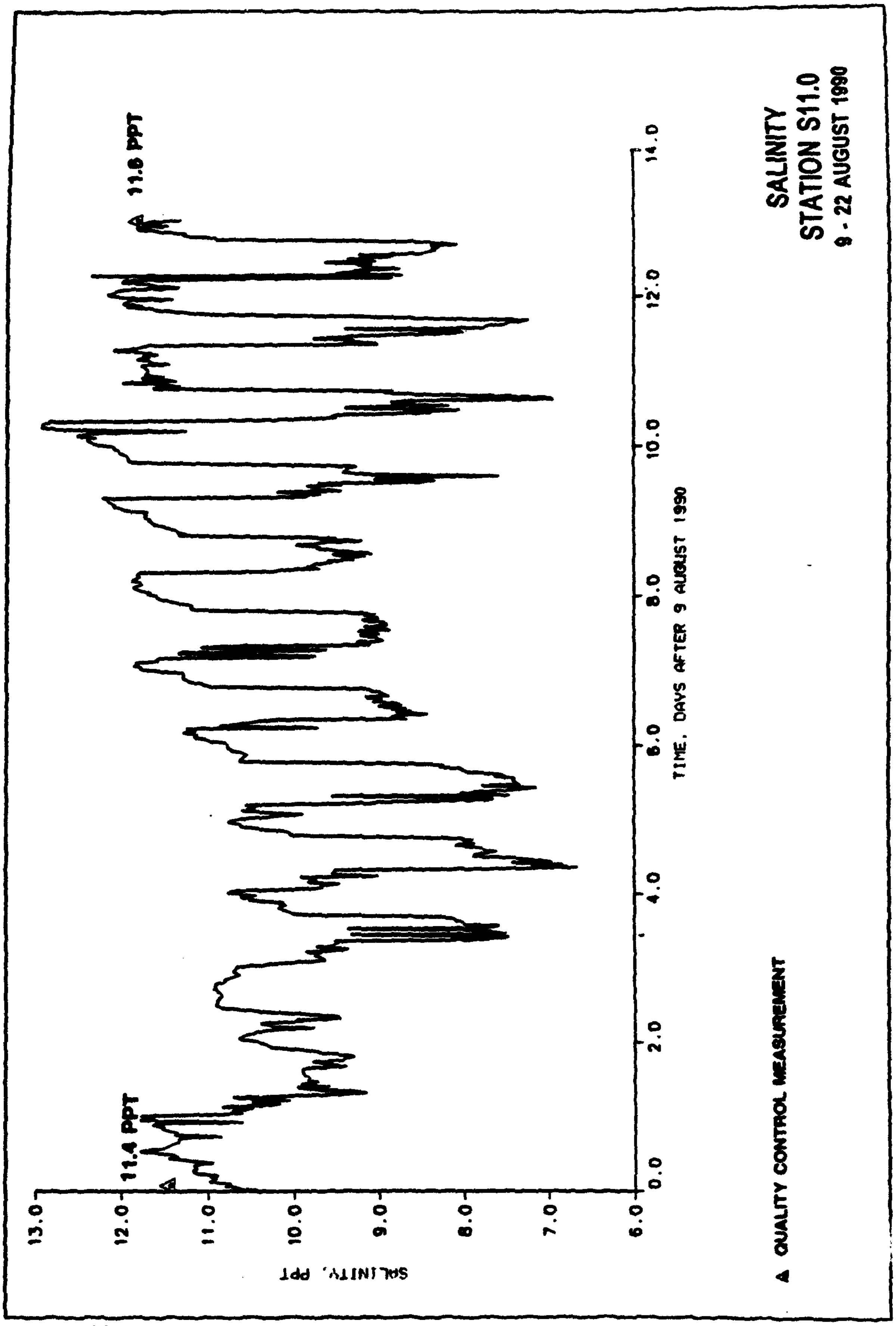

SALINITY
STATION S11.0
9 - 22 AUGUST 1990
SALINITY, PPT
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
TIME, DAYS AFTER 9 AUGUST 1990
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
11.4 PPT
11.6 PPT
▲ QUALITY CONTROL MEASUREMENT

Plate 190

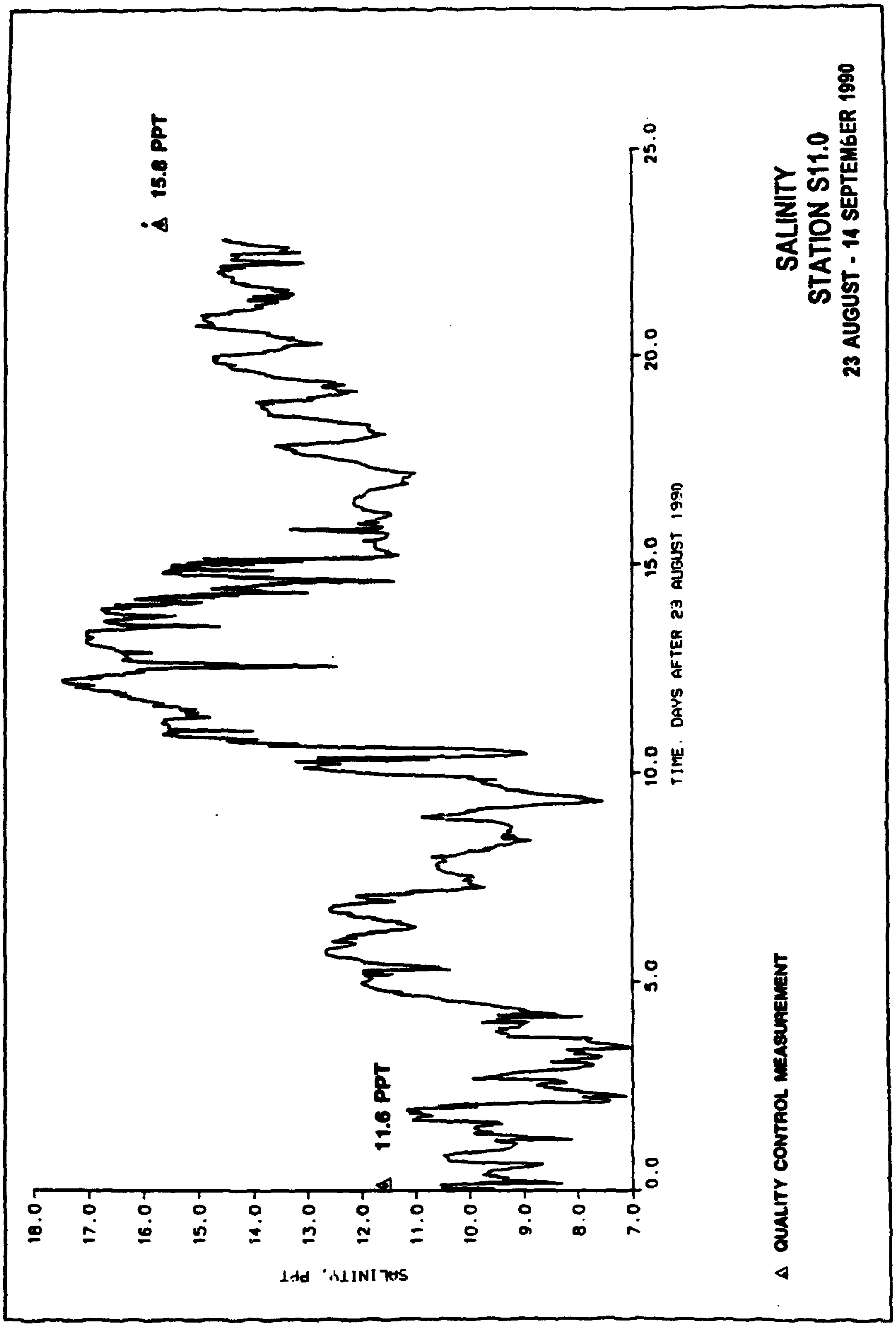
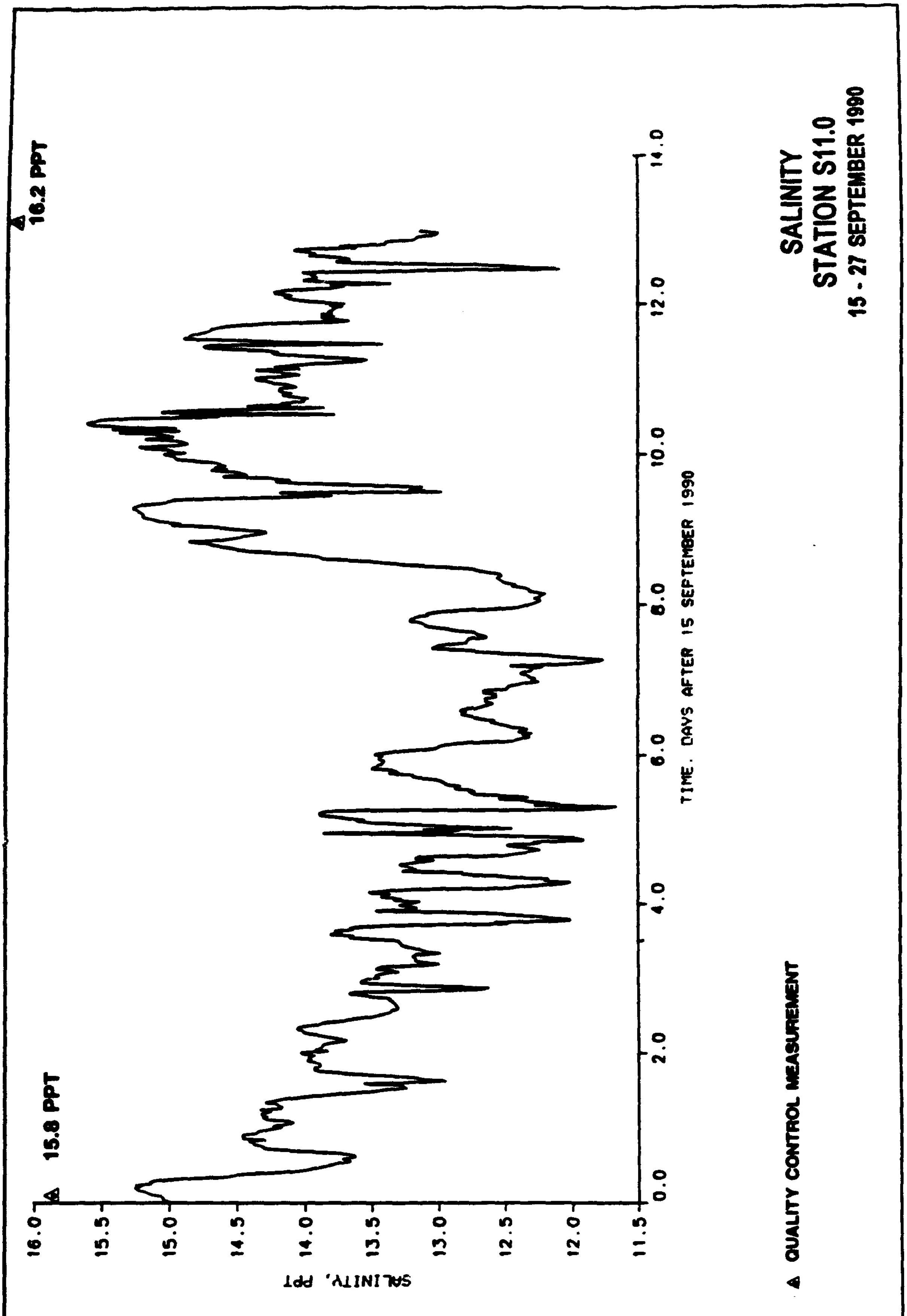
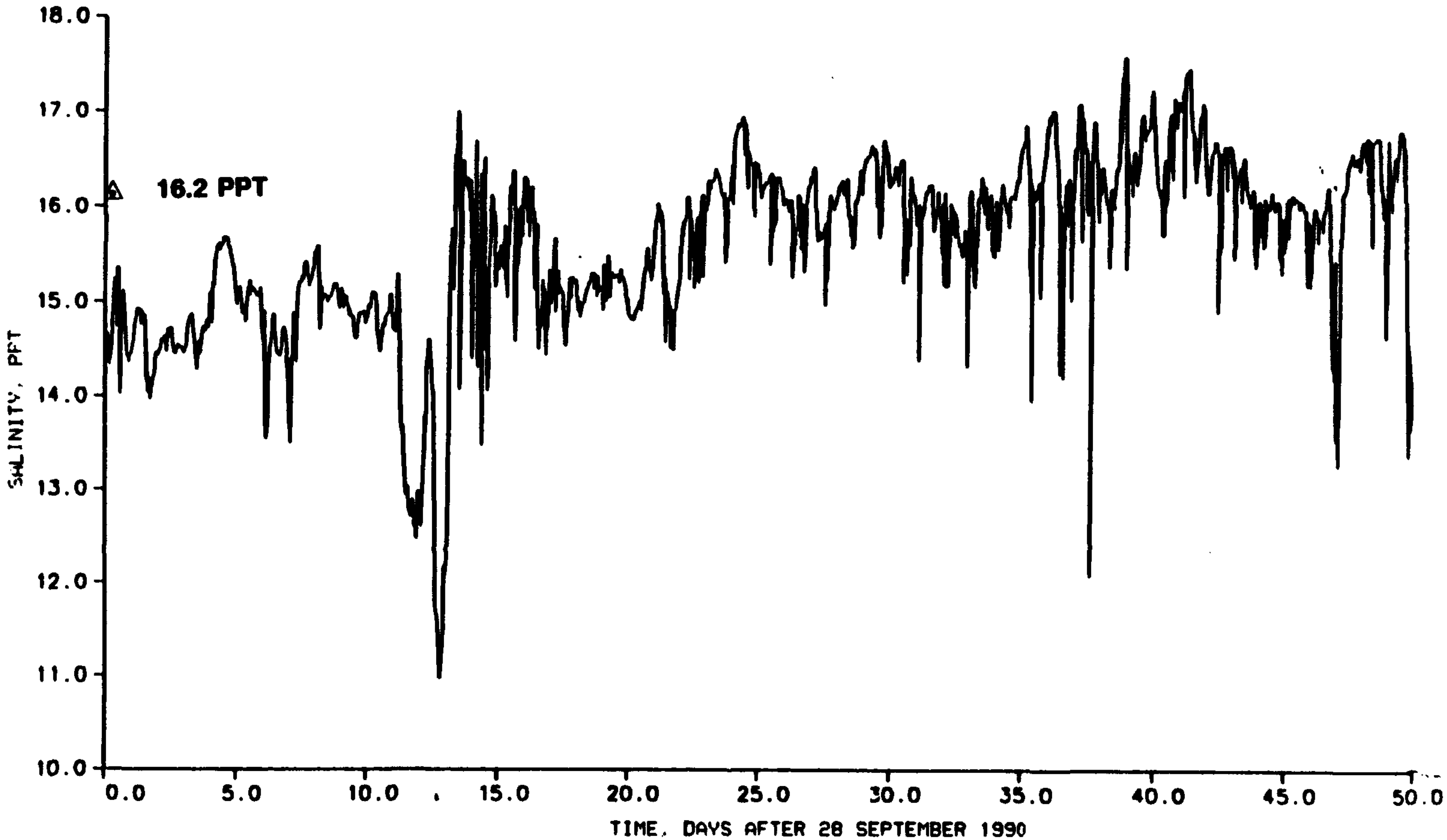

SALINITY
STATION S11.0
23 AUGUST - 14 SEPTEMBER 1990
Δ 15.8 PPT
Δ 11.6 PPT
Δ QUALITY CONTROL MEASUREMENT
SALINITY, PPT
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
10.0
9.0
8.0
7.0
0.0
5.0
10.0
15.0
20.0
25.0
TIME, DAYS AFTER 23 AUGUST 1990

Plate 191



SALINITY
STATION S11.0
15 - 27 SEPTEMBER 1990



▲ QUALITY CONTROL MEASUREMENT

SALINITY
STATION S11.0
28 SEPTEMBER - 16 NOVEMBER 1990

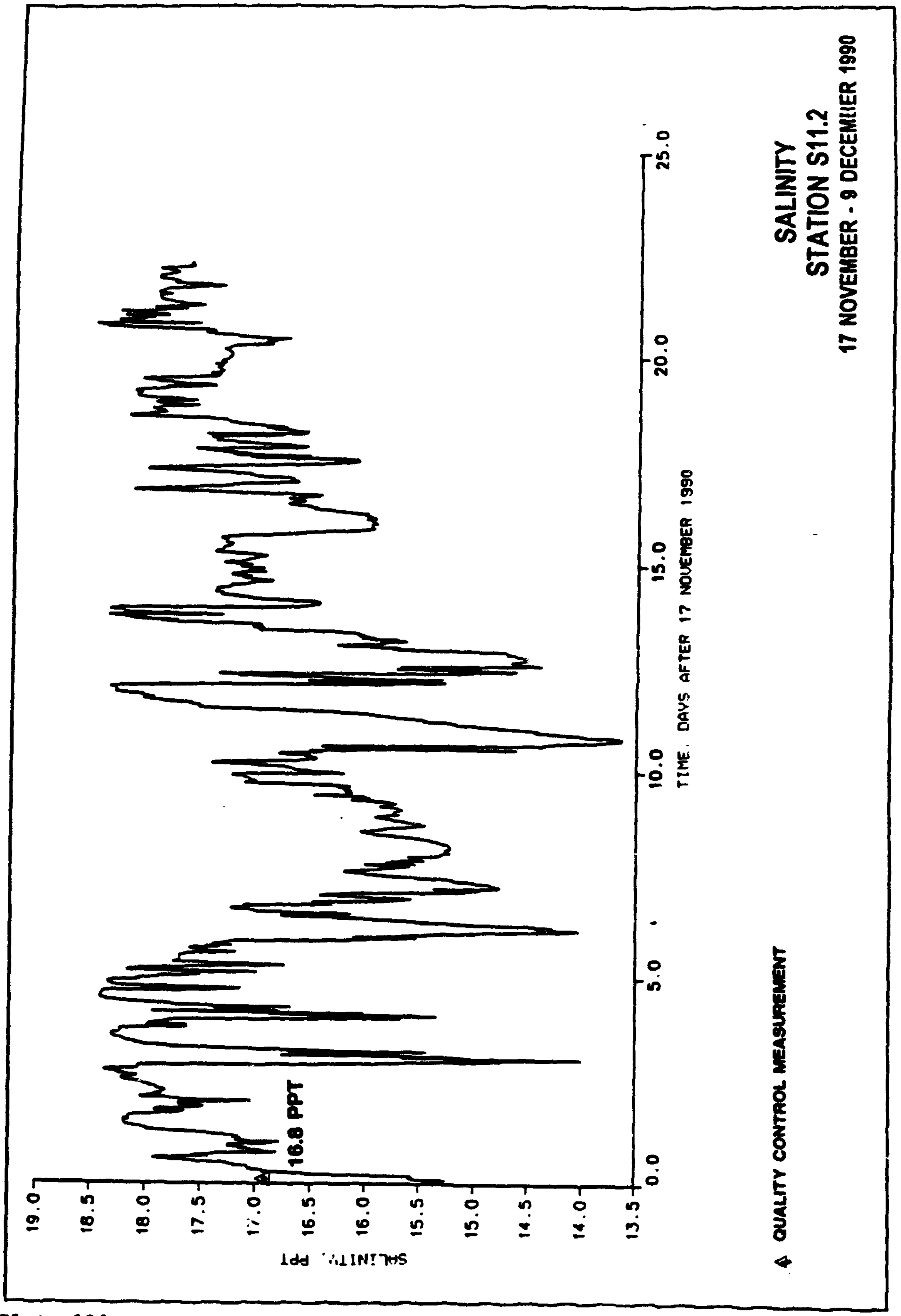

SALINITY
STATION S11.2
17 NOVEMBER - 9 DECEMBER 1990
SALINITY, PPT
TIME, DAYS AFTER 17 NOVEMBER 1990
16.8 PPT
QUALITY CONTROL MEASUREMENT
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
15.0
14.5
14.0
13.5
0.0
5.0
10.0
15.0
20.0
25.0

Plate 194

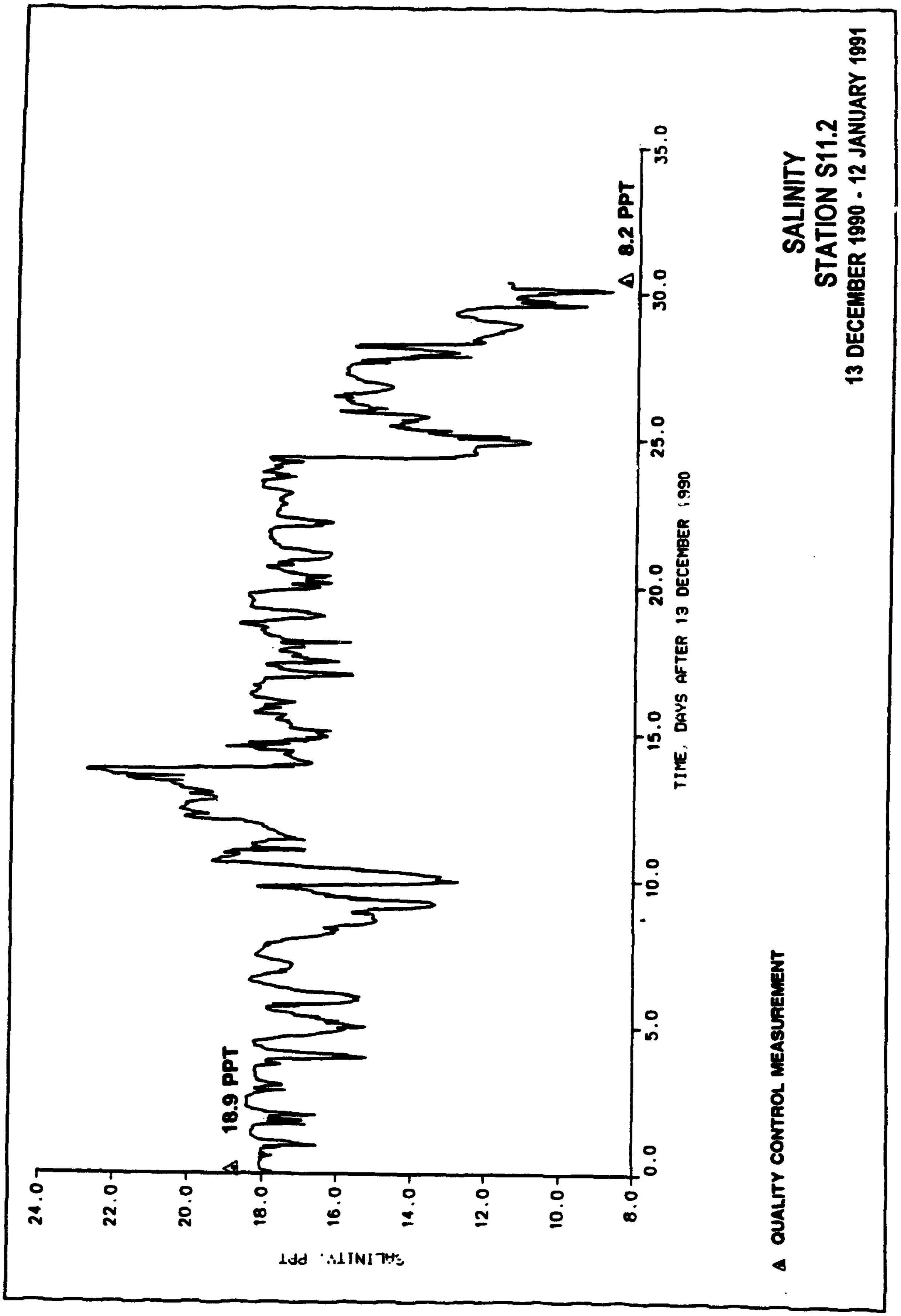

SALINITY
STATION S11.2
13 DECEMBER 1990 - 12 JANUARY 1991
SALINITY, PPT
TIME, DAYS AFTER 13 DECEMBER 1990
Δ 18.9 PPT
Δ 8.2 PPT
Δ QUALITY CONTROL MEASUREMENT
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0

Plate 195

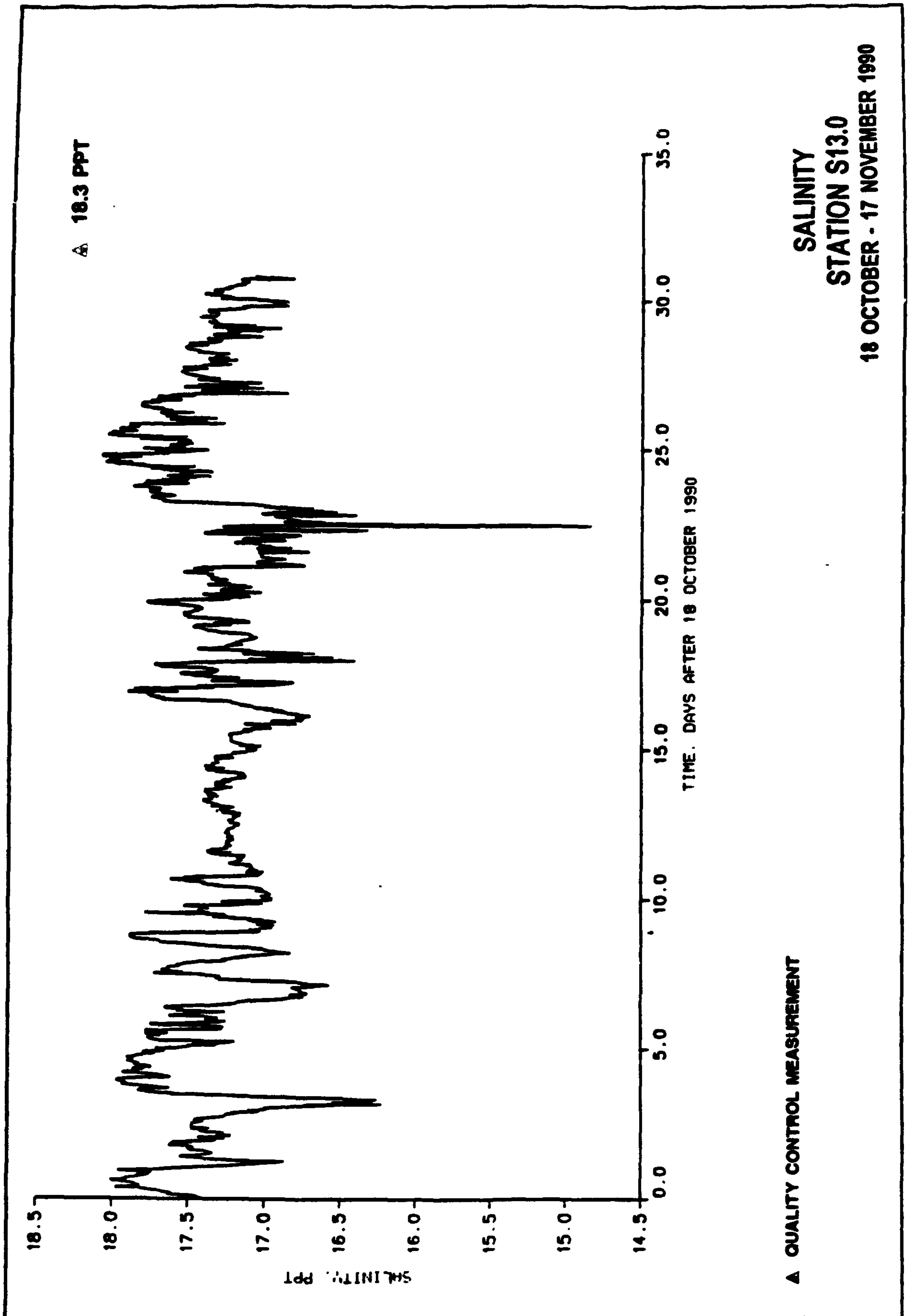
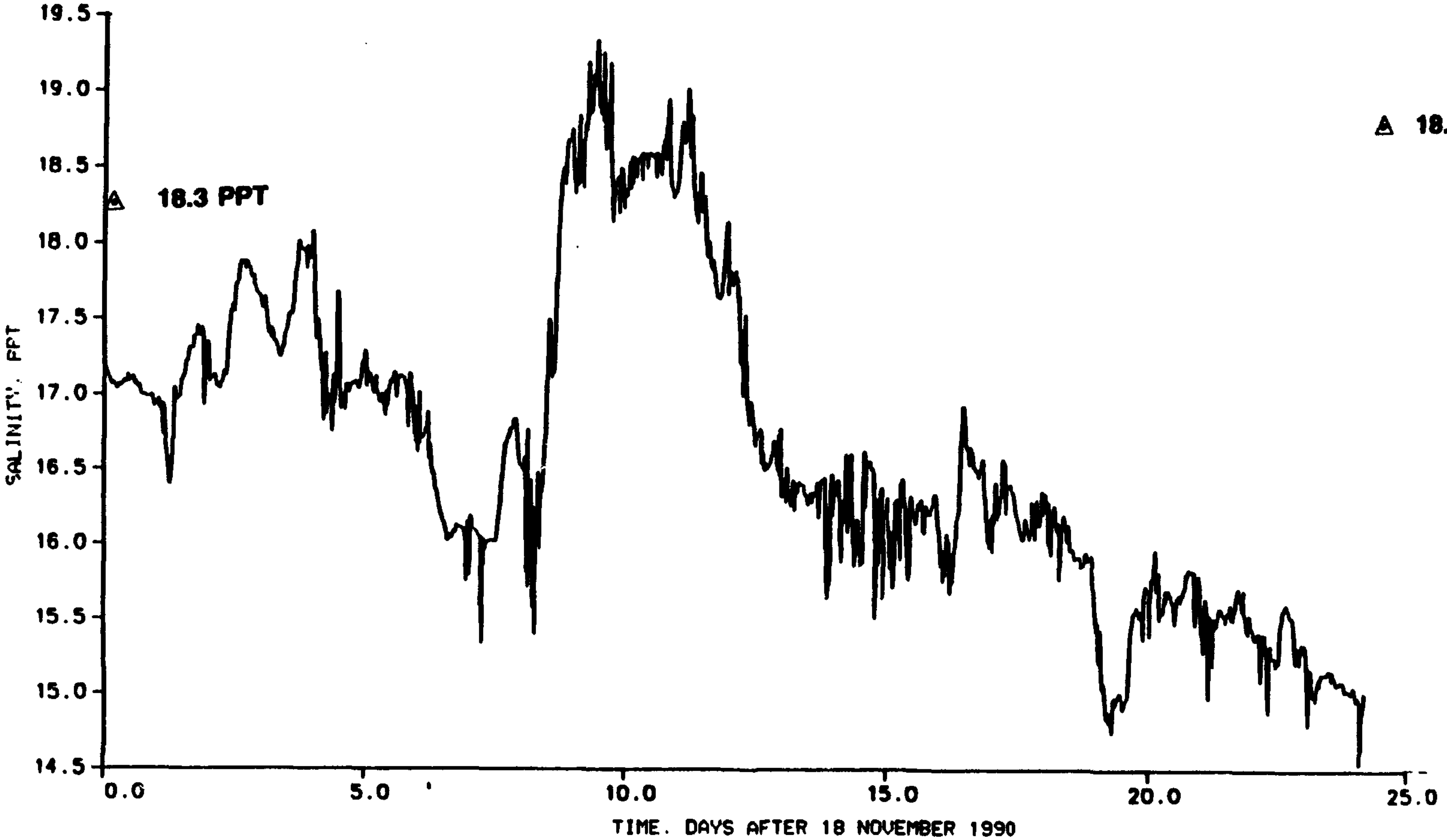

SALINITY
STATION S13.0
18 OCTOBER - 17 NOVEMBER 1990
SALINITY, PPT
18.5
18.0
17.5
17.0
16.5
16.0
15.5
15.0
14.5
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
TIME, DAYS AFTER 18 OCTOBER 1990
▲ 18.3 PPT
▲ QUALITY CONTROL MEASUREMENT

Plate 196



QUALITY CONTROL MEASUREMENT

SALINITY
STATION S13.0
18 NOVEMBER - 11 DECEMBER 1990

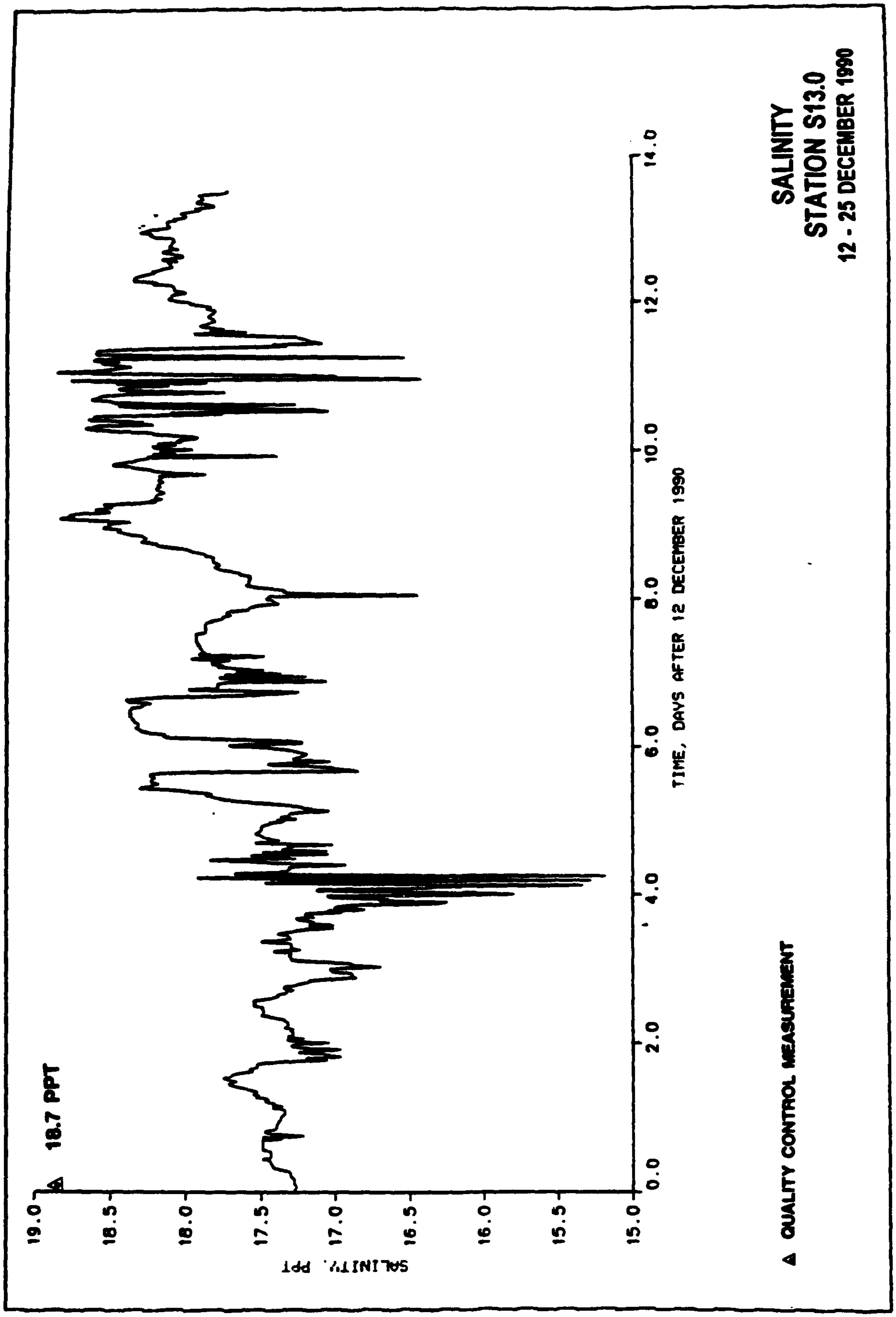

SALINITY
STATION S13.0
12 - 25 DECEMBER 1990
TIME, DAYS AFTER 12 DECEMBER 1990
SALINITY, PPT
18.7 PPT
▲ QUALITY CONTROL MEASUREMENT
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
15.0
15.5
16.0
16.5
17.0
17.5
18.0
18.5
19.0

Plate 198

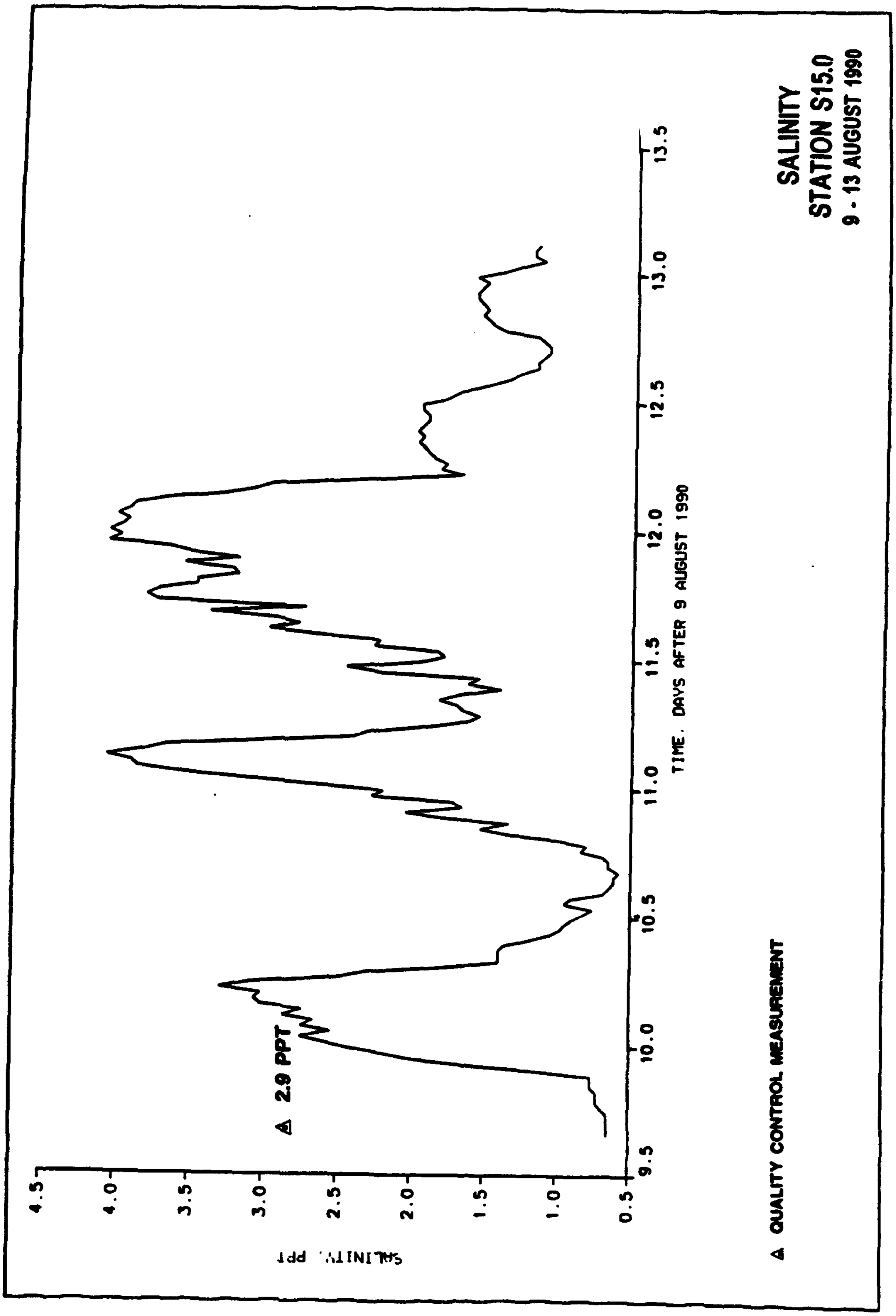
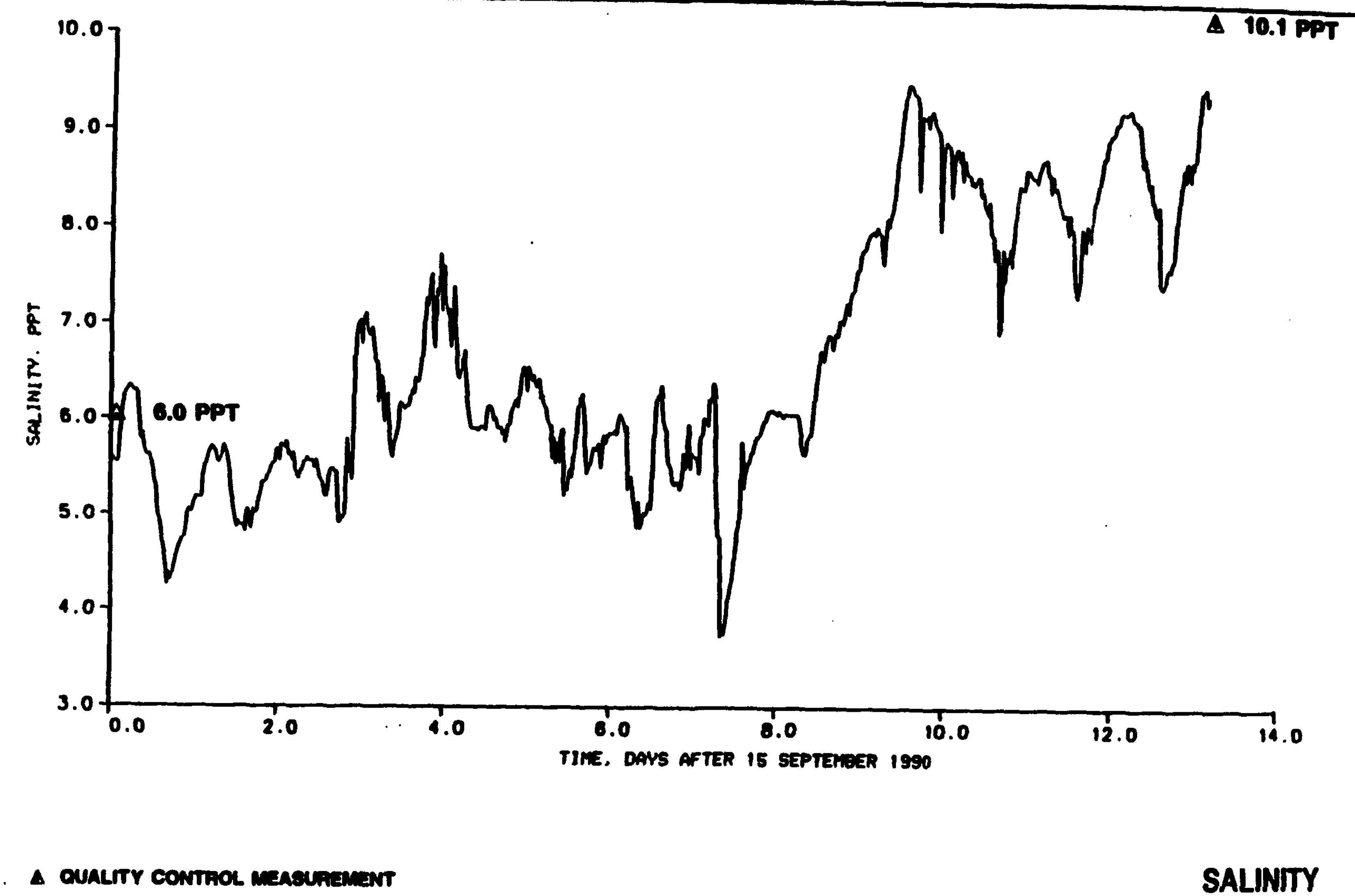
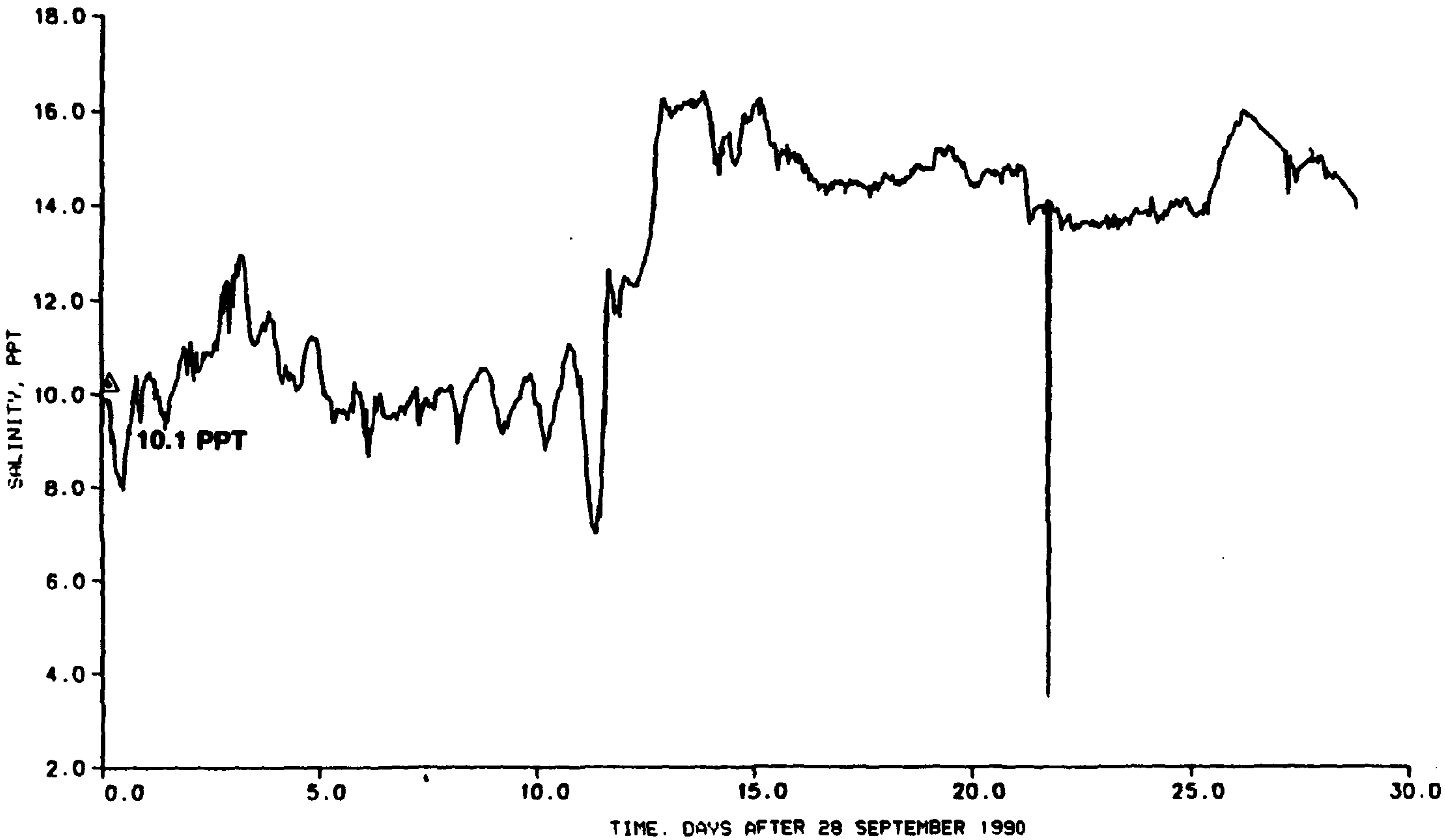

SALINITY
STATION S15.0
9 - 13 AUGUST 1990
SALINITY, PPT
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
9.5
10.0
10.5
11.0
11.5
12.0
12.5
13.0
13.5
TIME, DAYS AFTER 9 AUGUST 1990
Δ 2.9 PPT
Δ QUALITY CONTROL MEASUREMENT

Plate 199



SALINITY
STATION S15.0
15 - 27 SEPTEMBER 1990



▲ QUALITY CONTROL MEASUREMENT

SALINITY
STATION S15.0
28 SEPTEMBER - 27 OCTOBER 1990

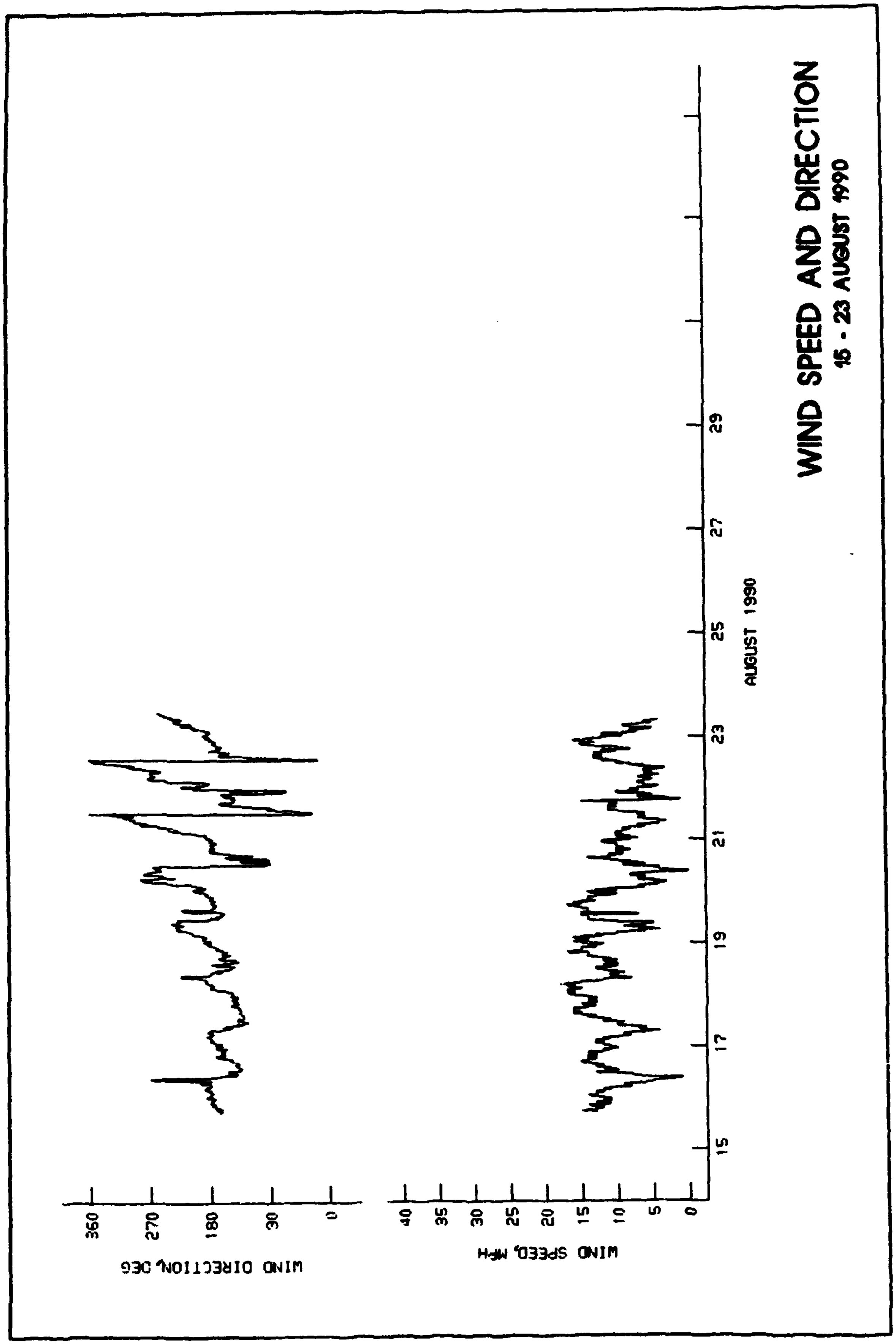
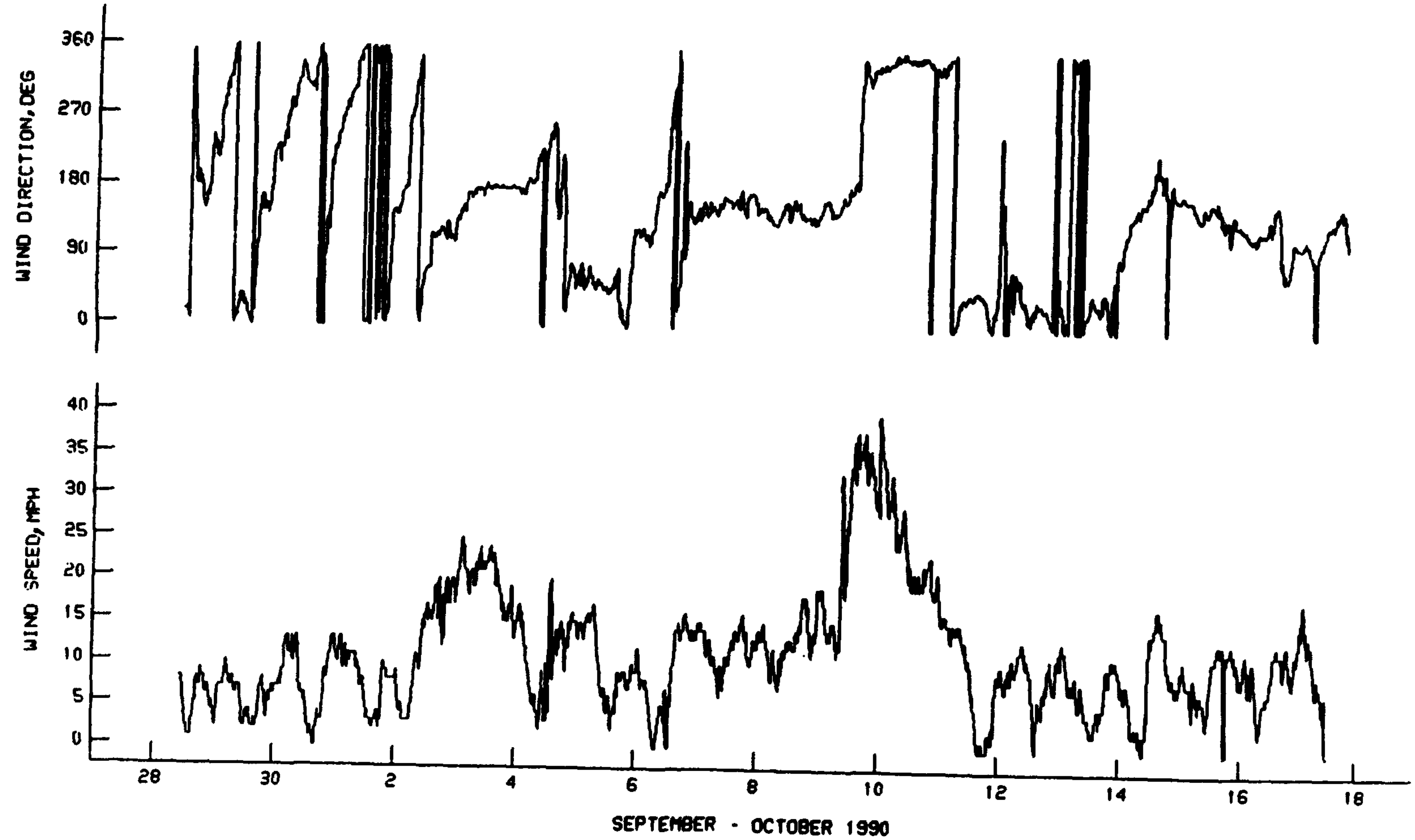

WIND SPEED AND DIRECTION
15 - 23 AUGUST 1990
WIND DIRECTION, DEG
360
270
180
30
0
WIND SPEED, MPH
40
35
30
25
20
15
10
5
0
15
17
19
21
23
25
27
29
AUGUST 1990

Plate 202



WIND SPEED AND DIRECTION
28 SEPTEMBER - 17 OCTOBER 1990

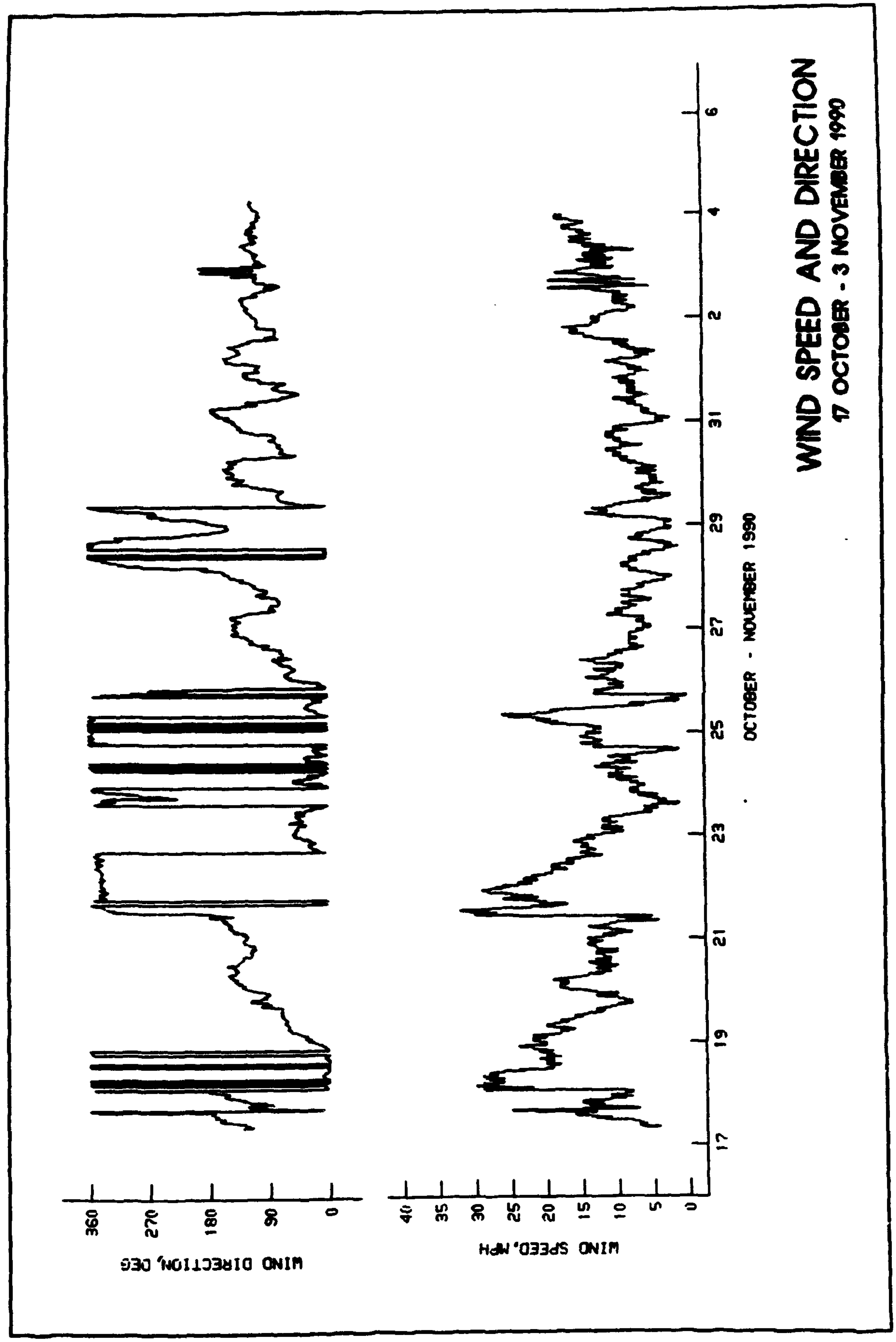
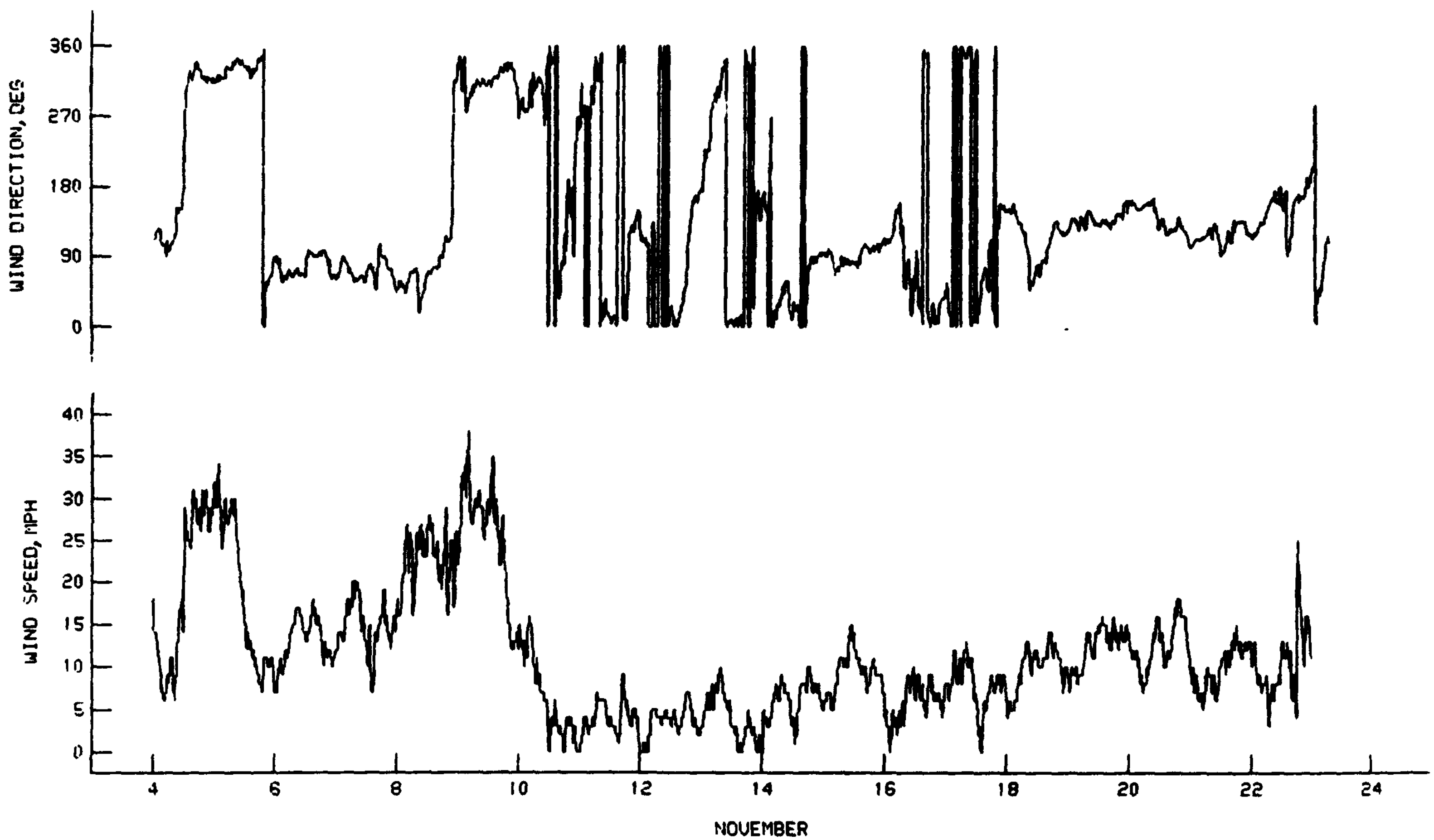

WIND SPEED AND DIRECTION
17 OCTOBER - 3 NOVEMBER 1990
OCTOBER - NOVEMBER 1990
WIND DIRECTION, DEG
WIND SPEED, MPH
360
270
180
90
0
40
35
30
25
20
15
10
5
0
17
19
21
23
25
27
29
31
2
4
6

Plate 204



WIND SPEED AND DIRECTION
4 - 22 NOVEMBER 1990

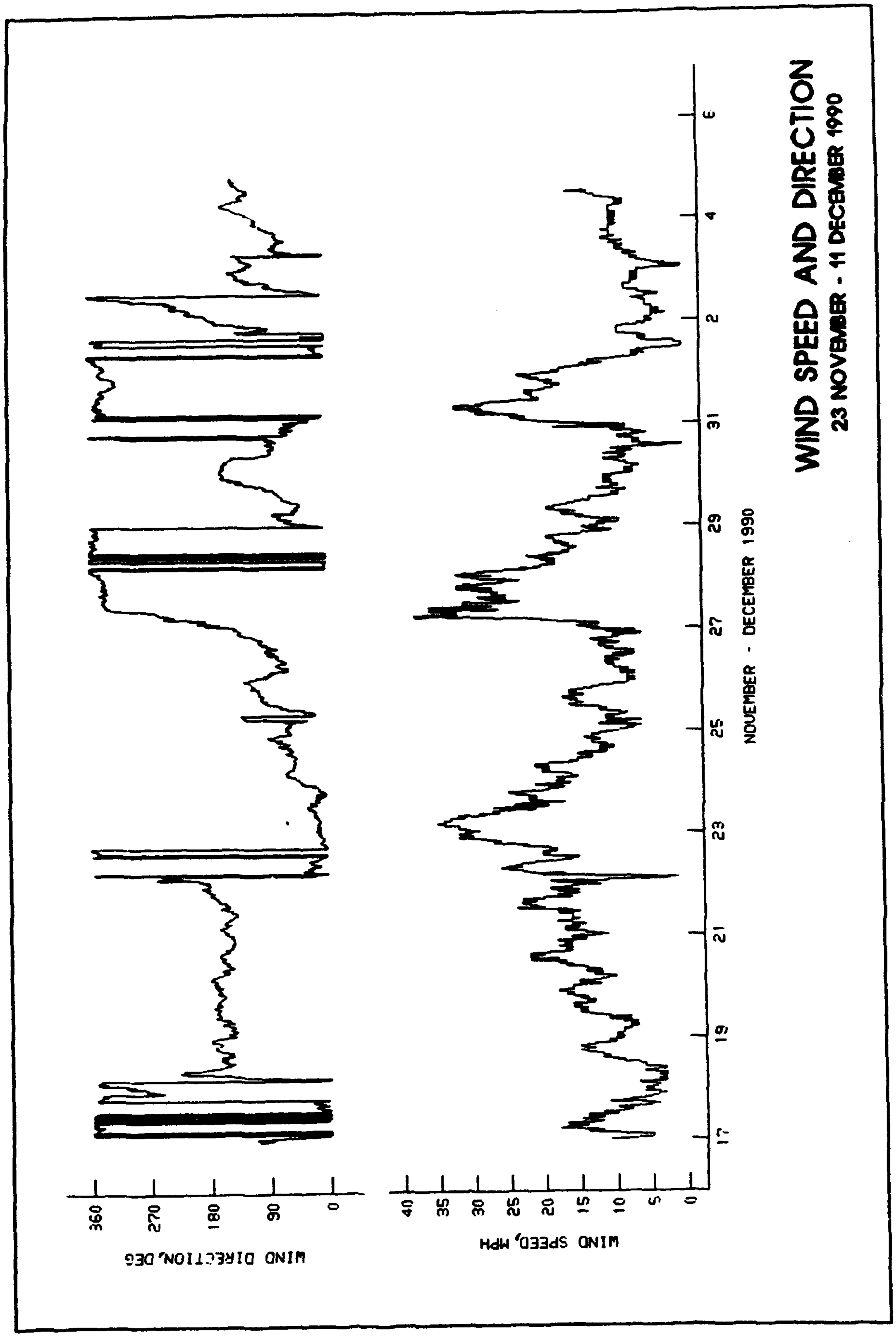
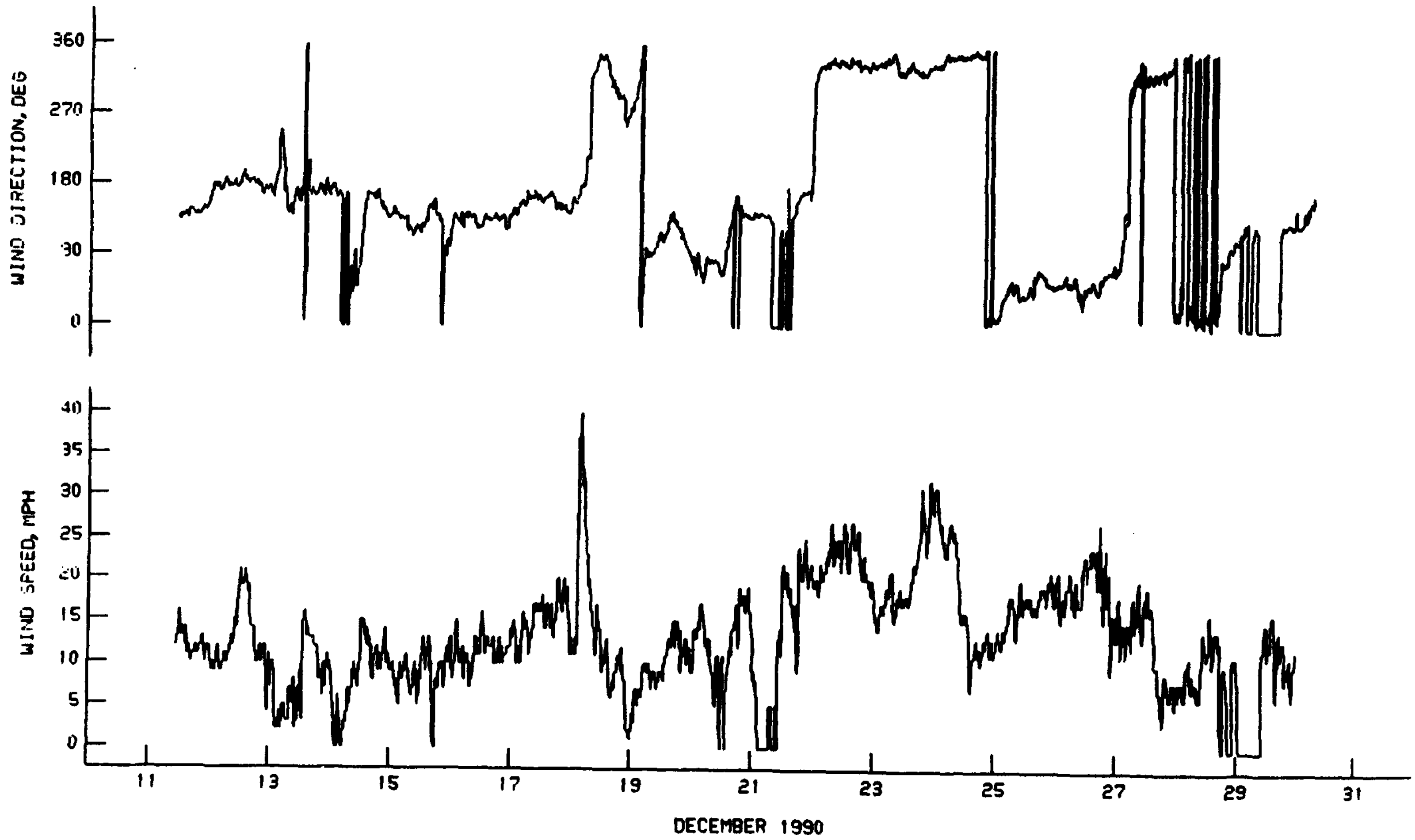

WIND SPEED AND DIRECTION
23 NOVEMBER - 11 DECEMBER 1990
NOVEMBER - DECEMBER 1990
17
19
21
23
25
27
29
31
2
4
6
WIND DIRECTION, DEG
360
270
180
90
0
WIND SPEED, MPH
40
35
30
25
20
15
10
5
0

Plate 206



WIND SPEED AND DIRECTION

11 - 29 DECEMBER 1990

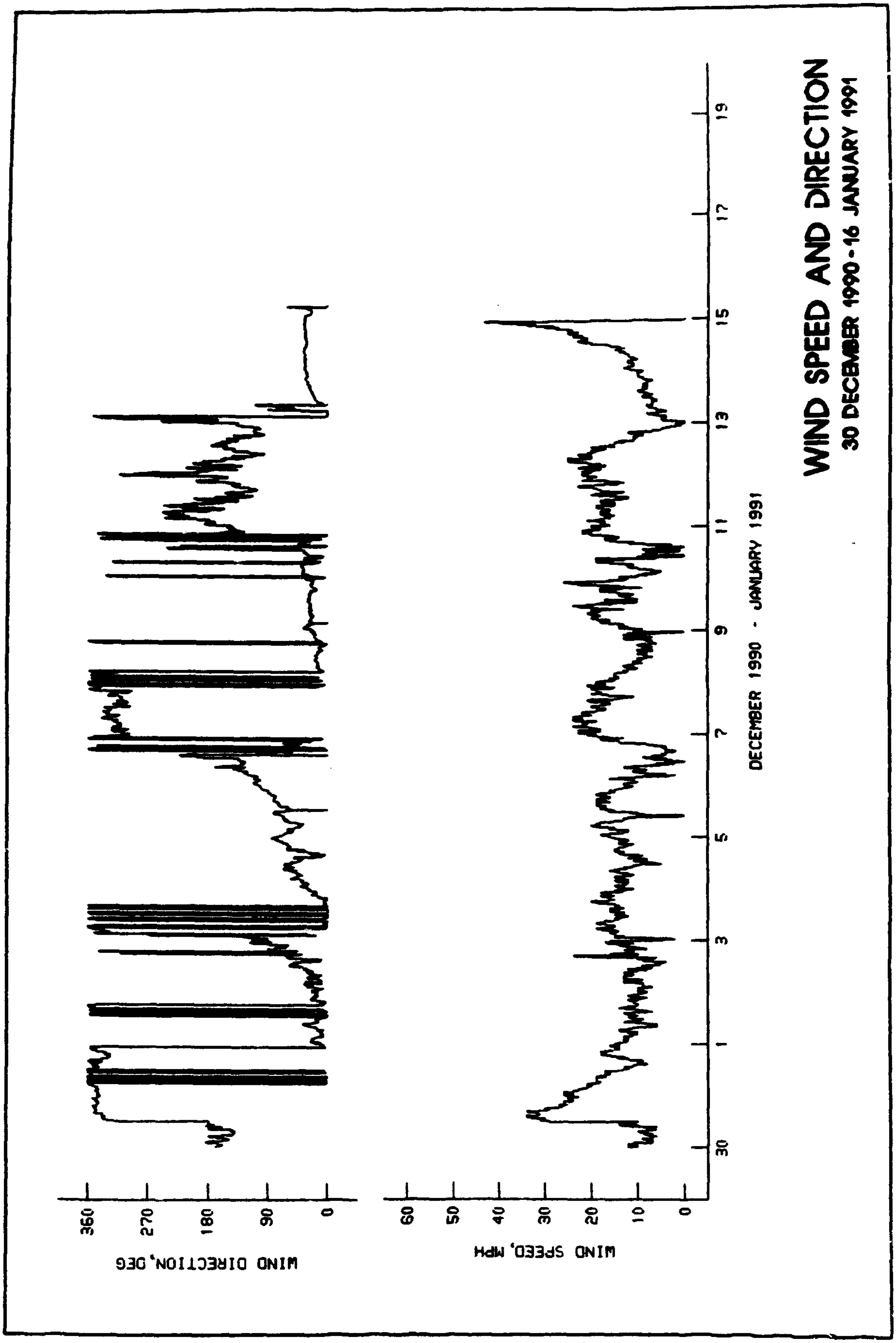
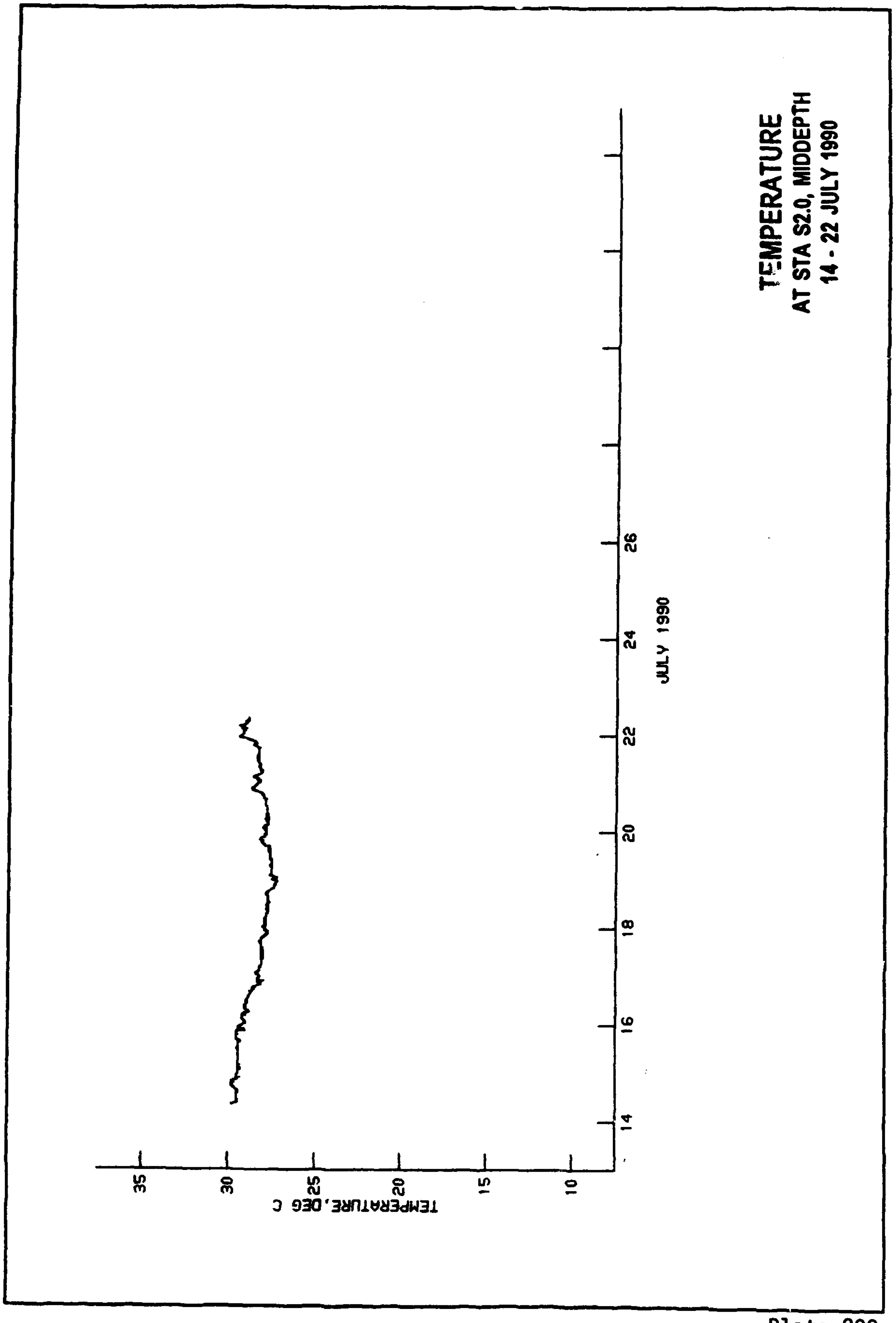
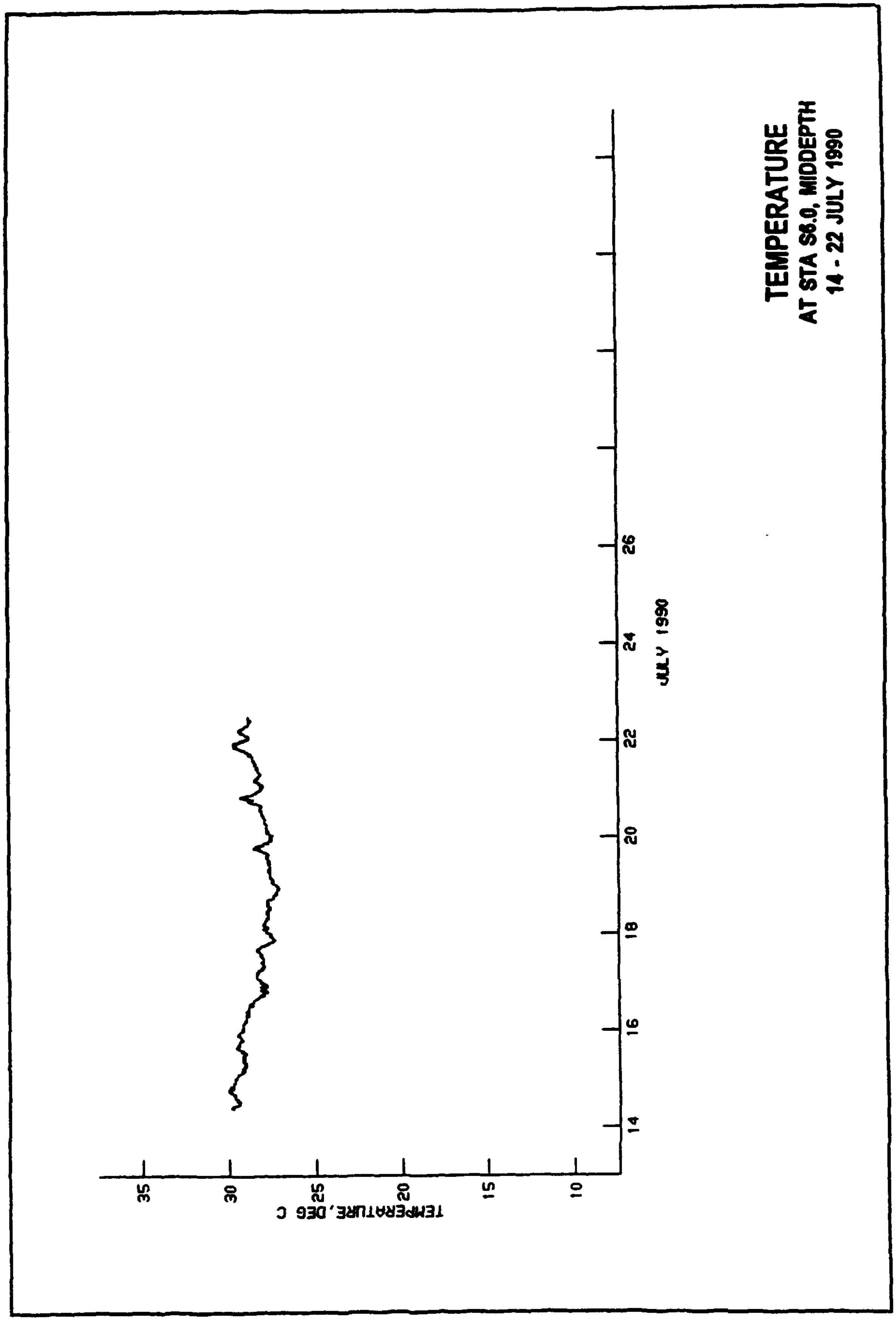
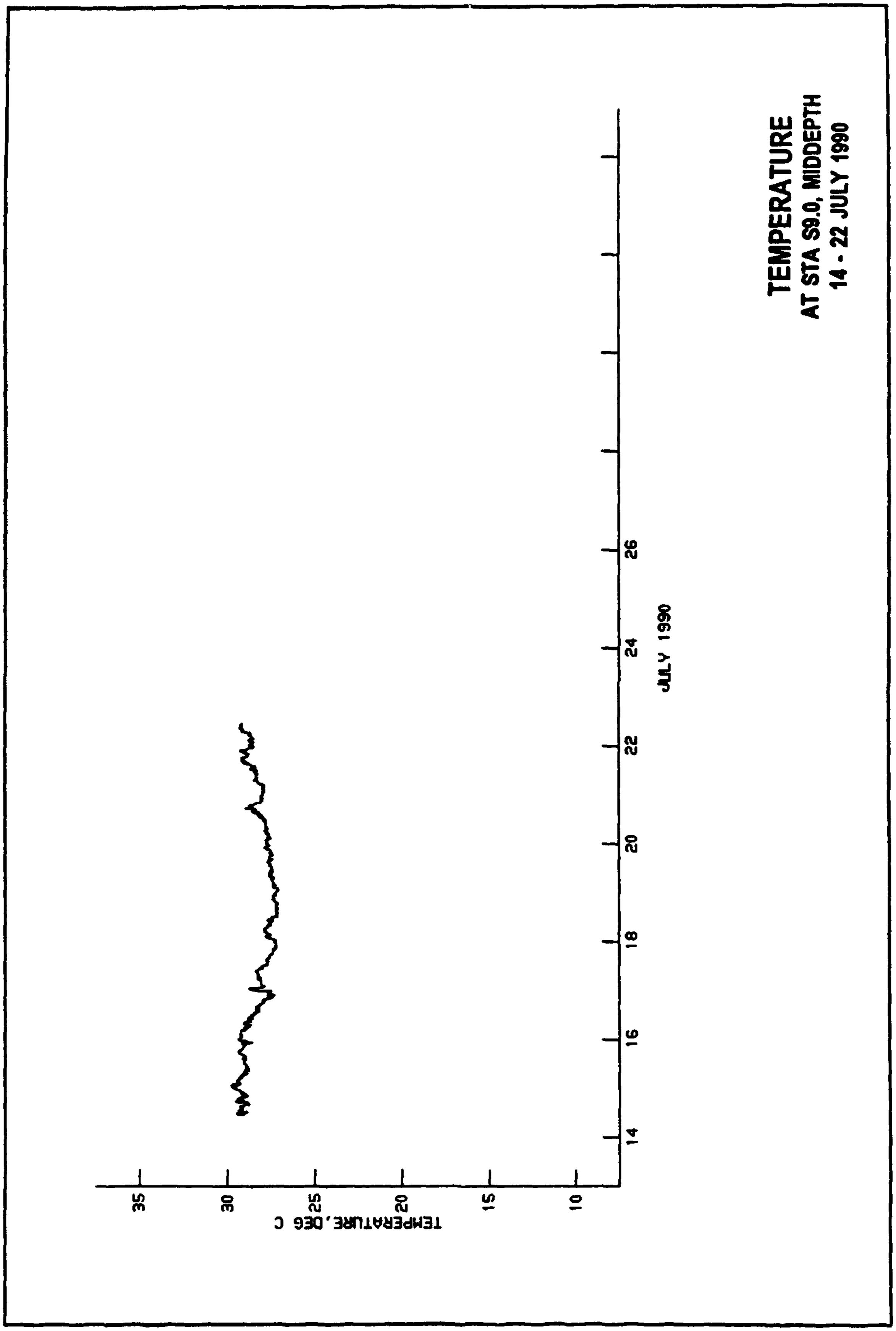

WIND SPEED AND DIRECTION
30 DECEMBER 1990-16 JANUARY 1991
DECEMBER 1990 - JANUARY 1991
30
1
3
5
7
9
11
13
15
17
19
WIND DIRECTION, DEG
360
270
180
90
0
WIND SPEED, MPH
60
50
40
30
20
10
0

Plate 208


TEMPERATURE
AT STA S2.0, MIDDEPTH
14 - 22 JULY 1990
TEMPERATURE, DEG C
35
30
25
20
15
10
JULY 1990
14
16
18
20
22
24
26


TEMPERATURE
AT STA S8.0, MIDDEPTH
14 - 22 JULY 1990
TEMPERATURE, DEG C
10
15
20
25
30
35
JULY 1990
14
16
18
20
22
24
26


TEMPERATURE
AT STA S9.0, MIDDEPTH
14 - 22 JULY 1990
TEMPERATURE, DEG C
10
15
20
25
30
35
14
16
18
20
22
24
26
JULY 1990

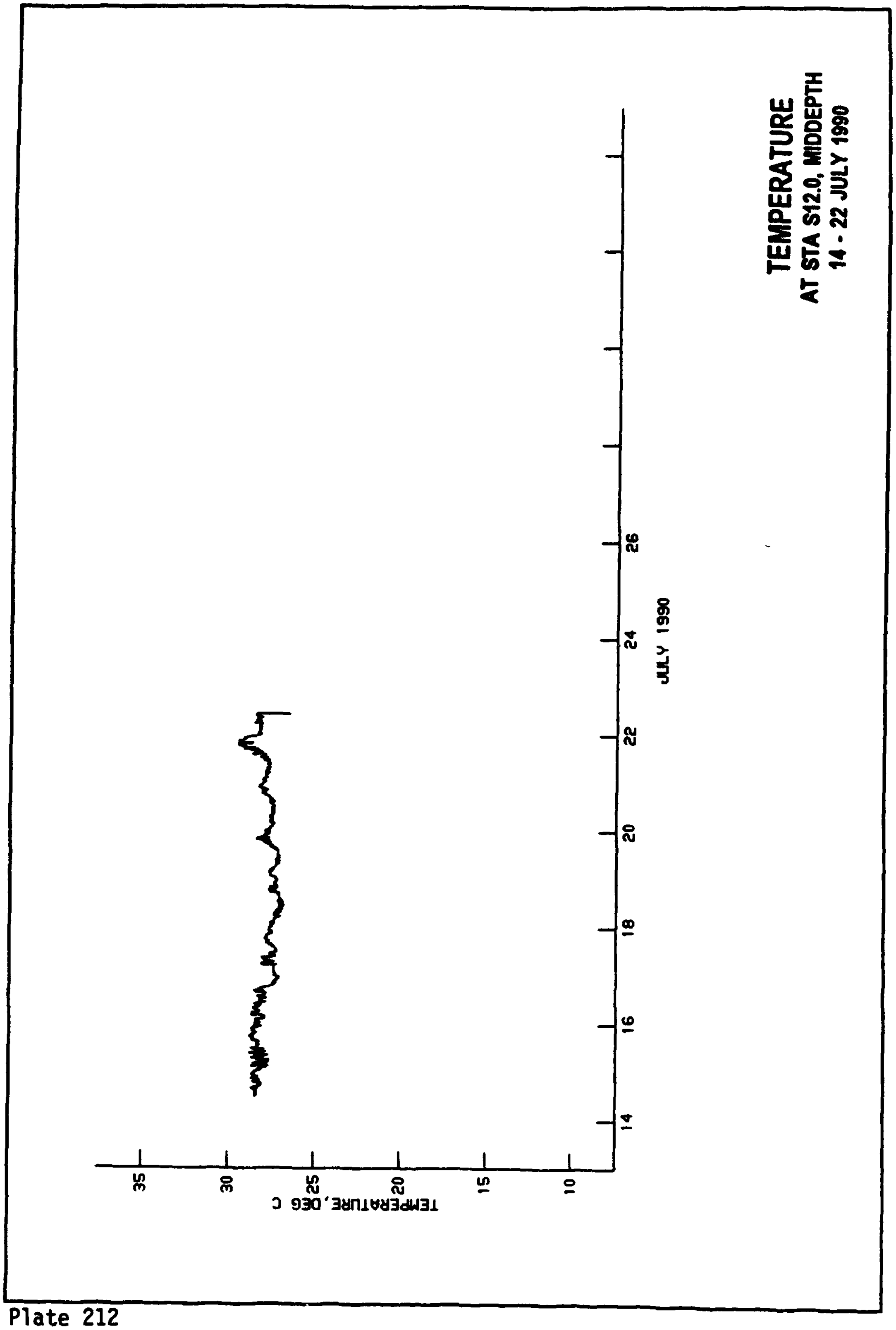
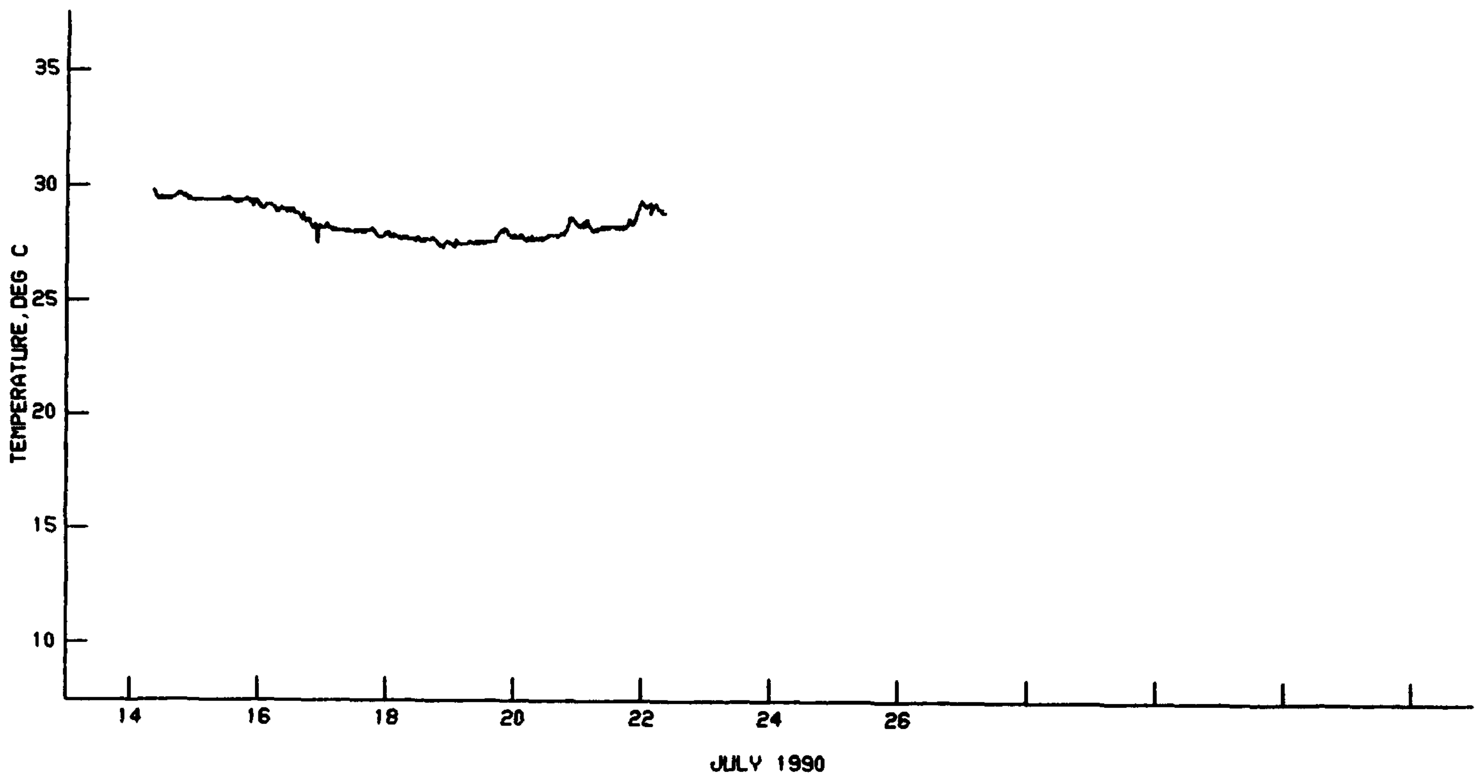
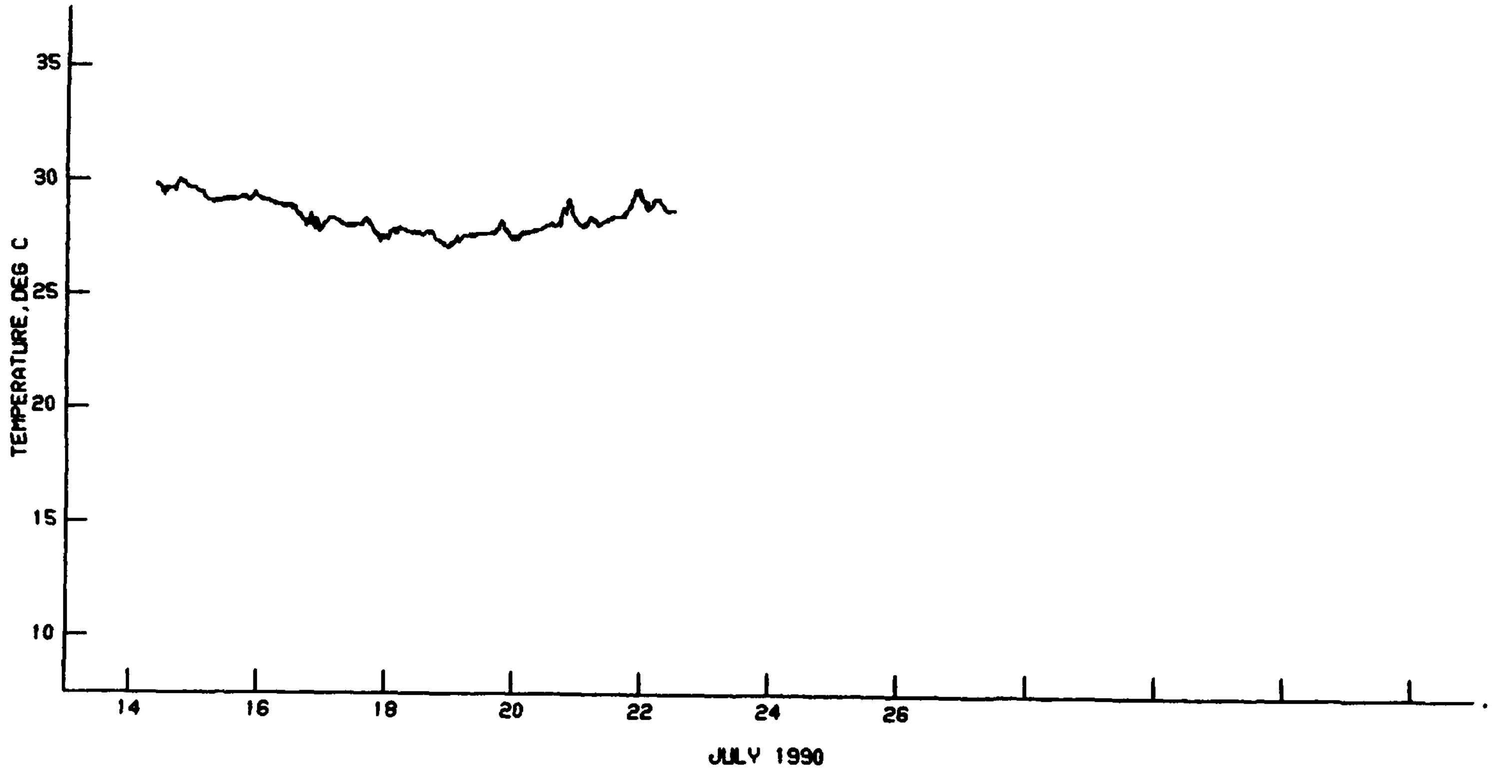

TEMPERATURE
AT STA S12.0, MIDDEPTH
14 - 22 JULY 1990
TEMPERATURE, DEG C
35
30
25
20
15
10
14
16
18
20
22
24
26
JULY 1990

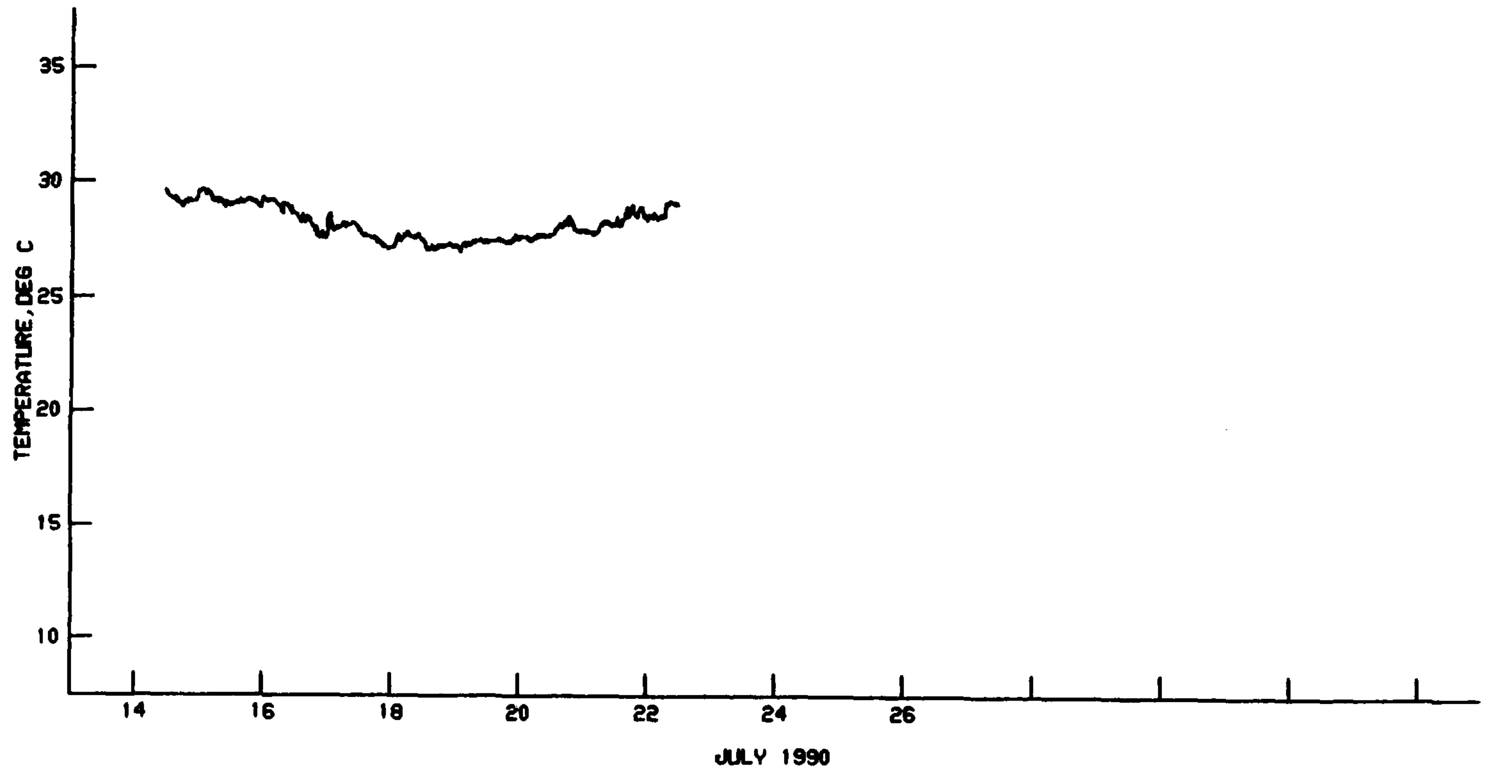
Plate 212



TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990



TEMPERATURE
AT STA S6.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990



TEMPERATURE
AT STA S9.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990

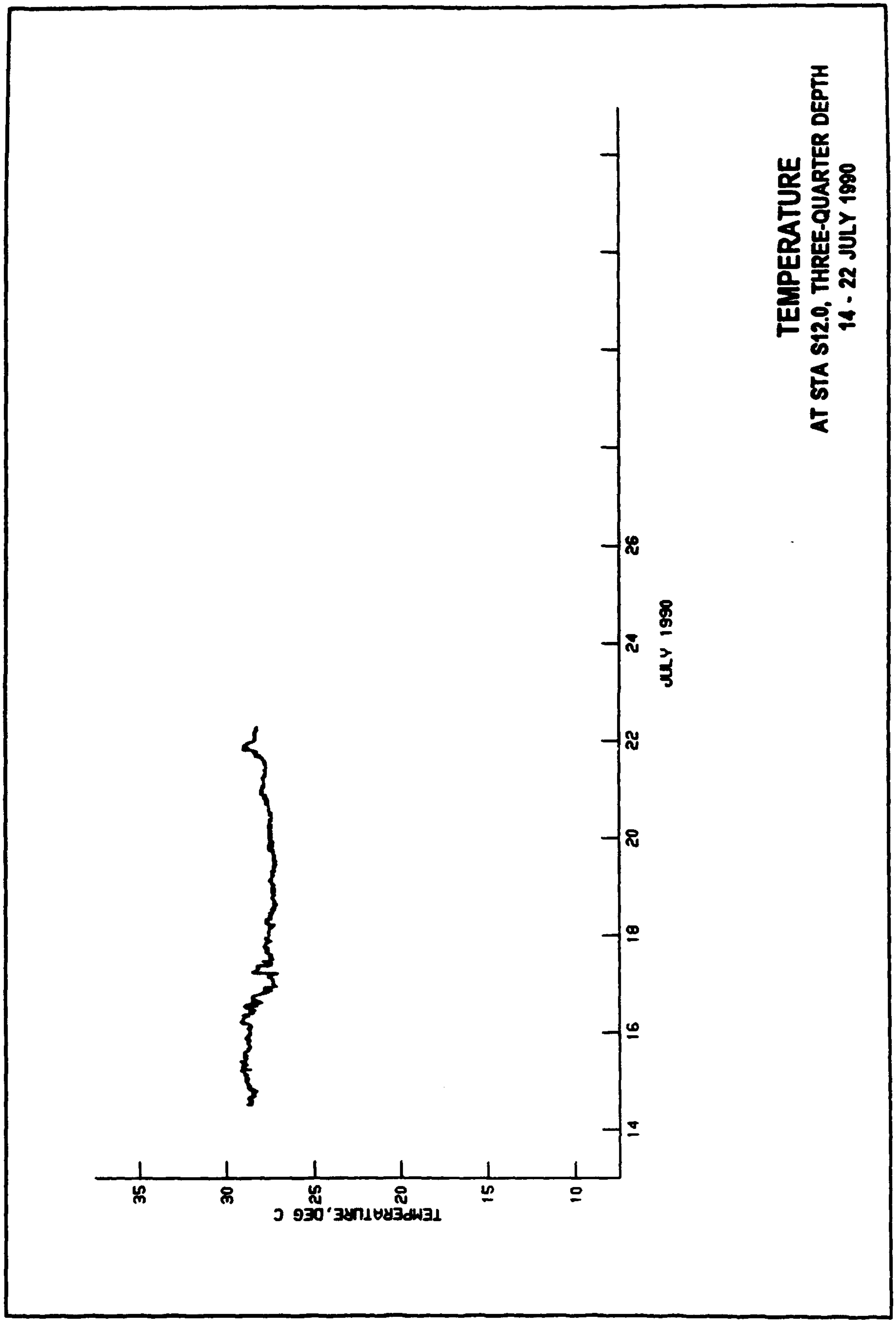
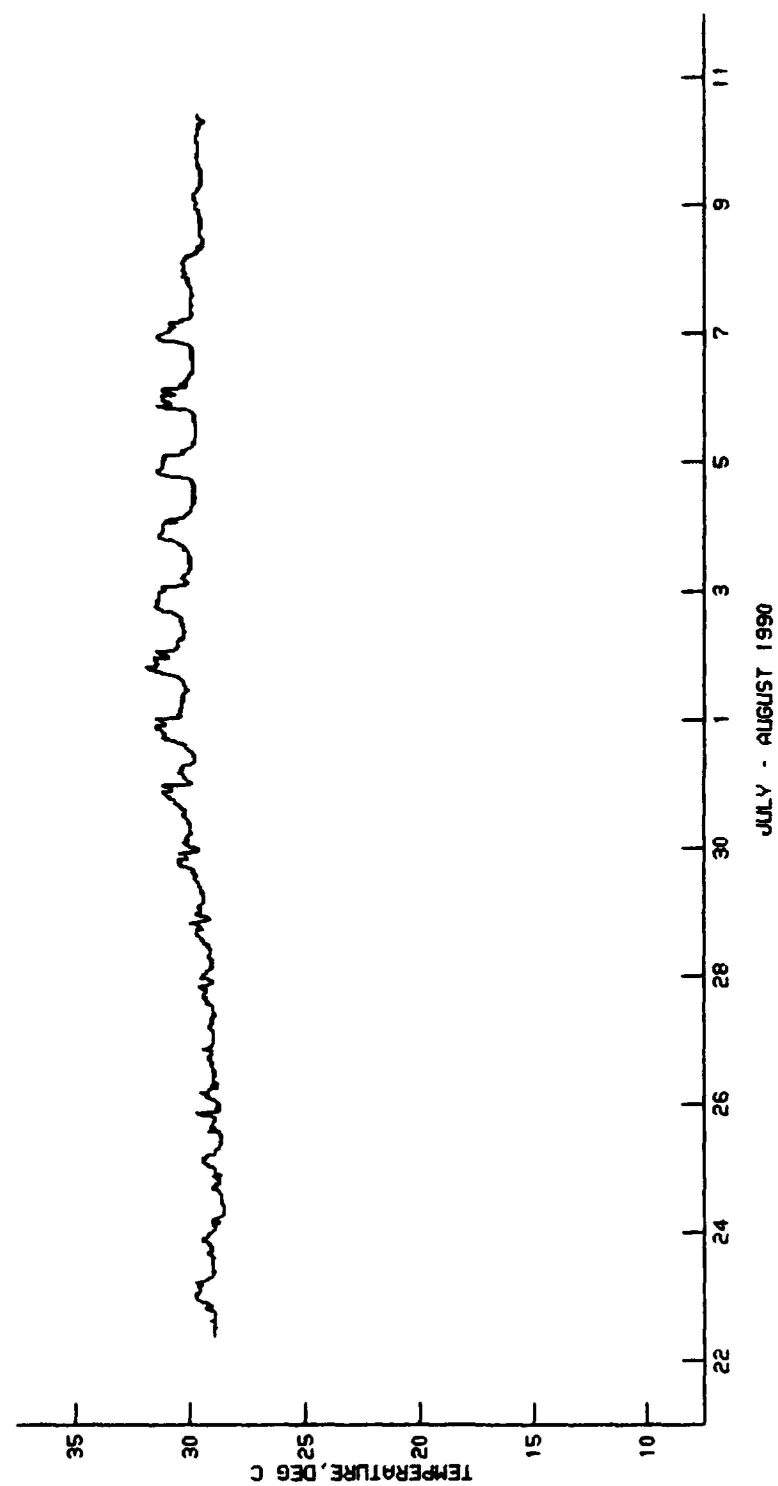

TEMPERATURE
AT STA S12.0, THREE-QUARTER DEPTH
14 - 22 JULY 1990
TEMPERATURE, DEG C
35
30
25
20
15
10
JULY 1990
14
16
18
20
22
24
26

Plate 216



TEMPERATURE
AT STA S2.0, MIDDEPTH
22 JULY - 10 AUGUST 1990

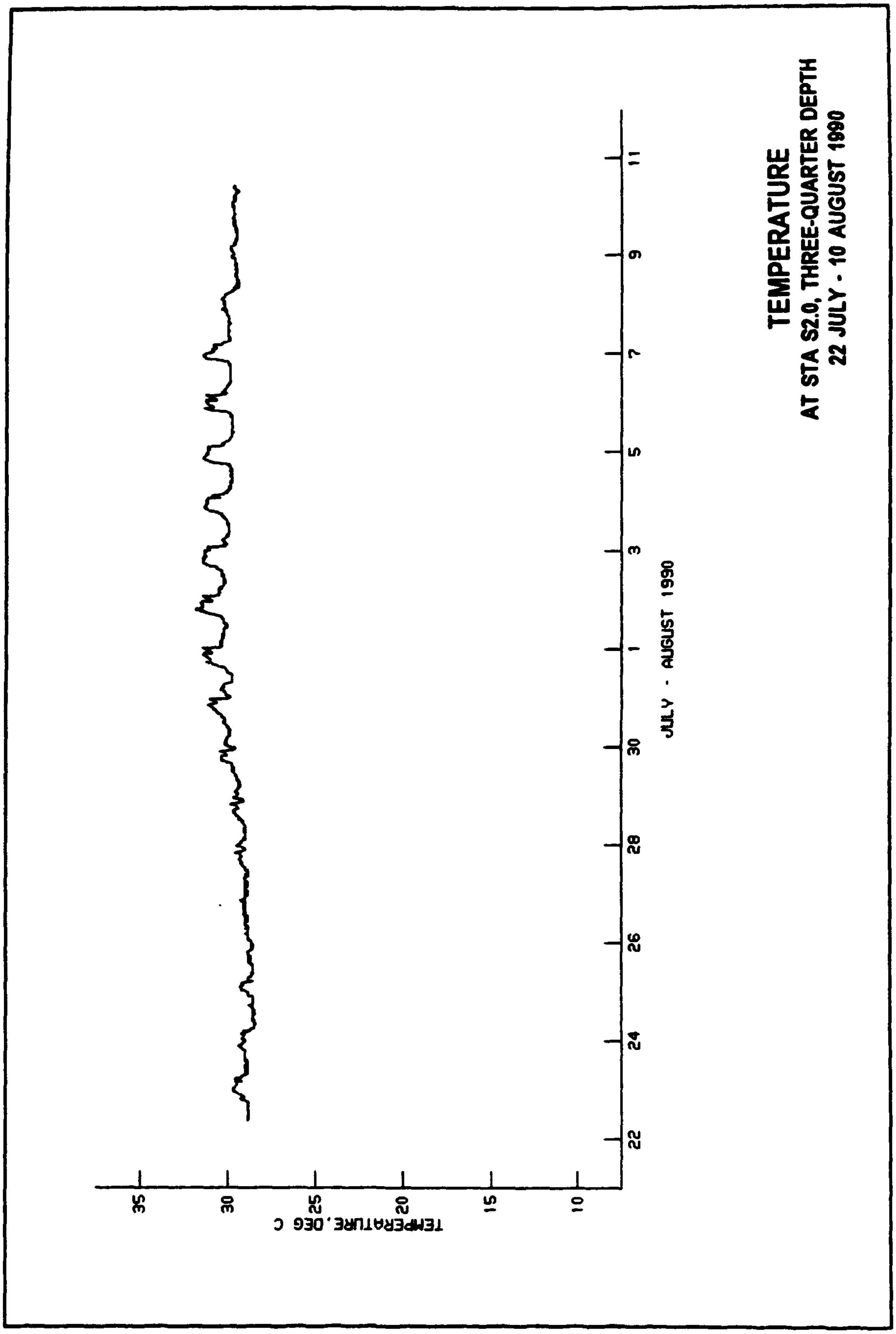
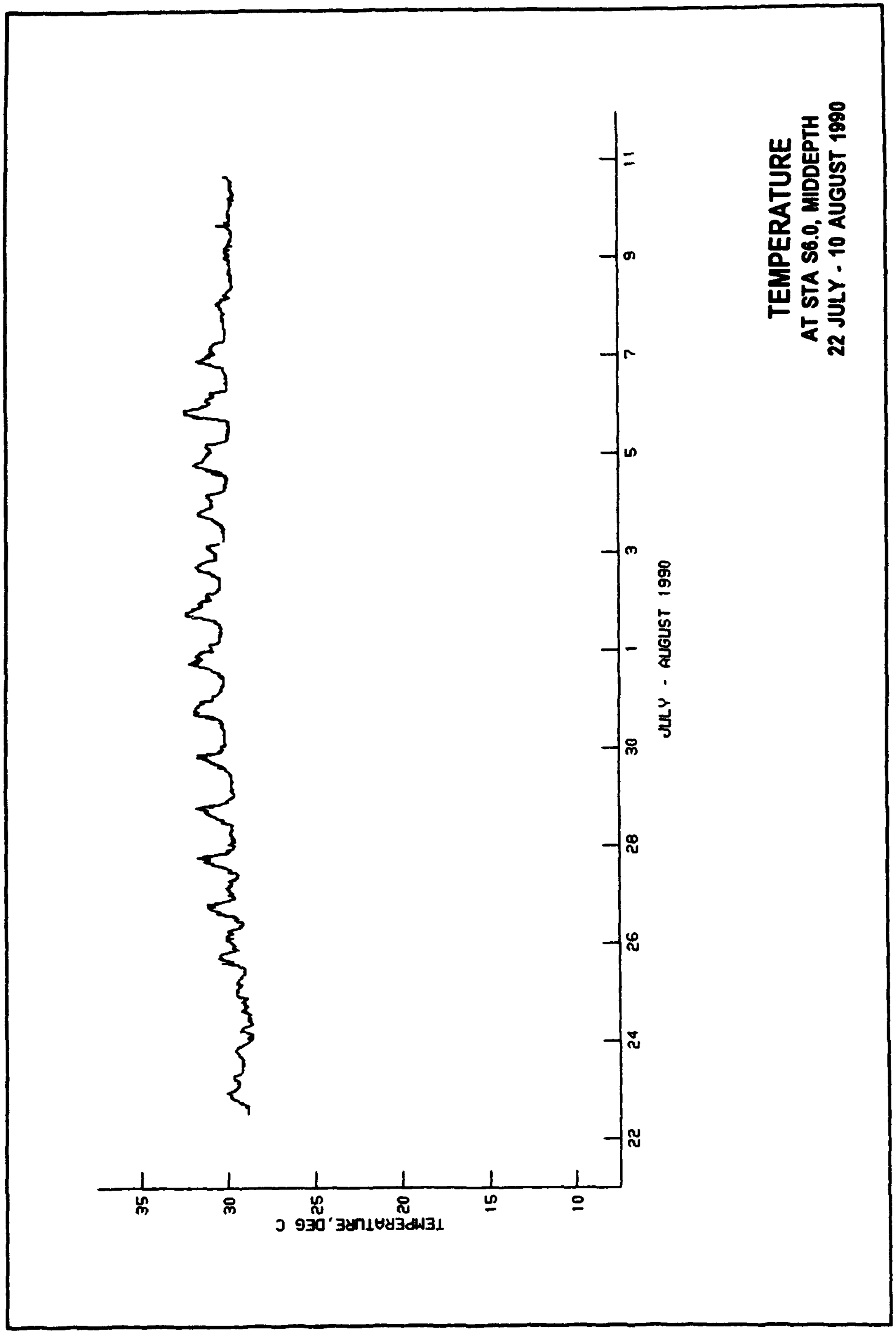

TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990
TEMPERATURE, DEG C
JULY - AUGUST 1990
10
15
20
25
30
35
22
24
26
28
30
1
3
5
7
9
11

Plate 218



TEMPERATURE
AT STA S6.0, MIDDEPTH
22 JULY - 10 AUGUST 1990
TEMPERATURE, DEG C
35
30
25
20
15
10
22
24
26
28
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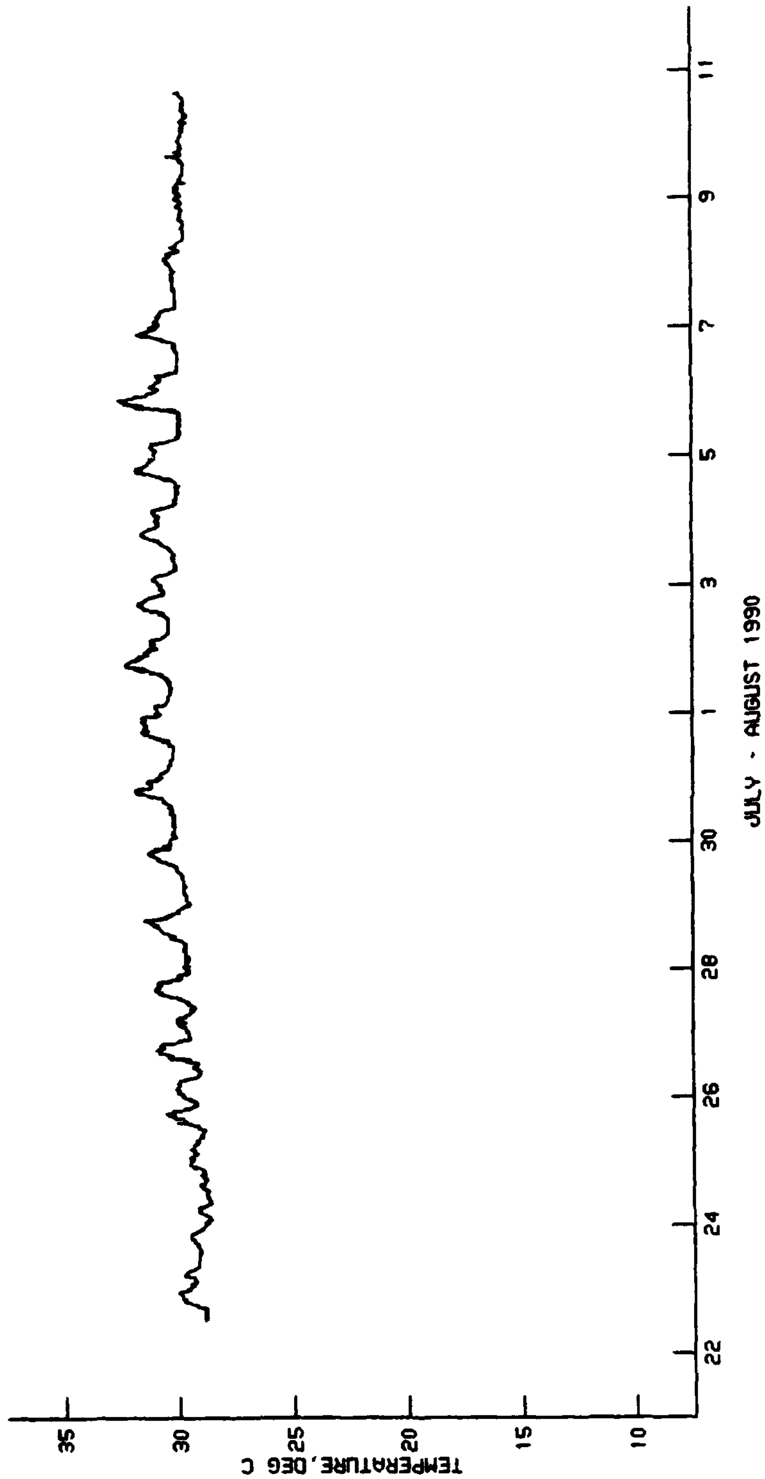
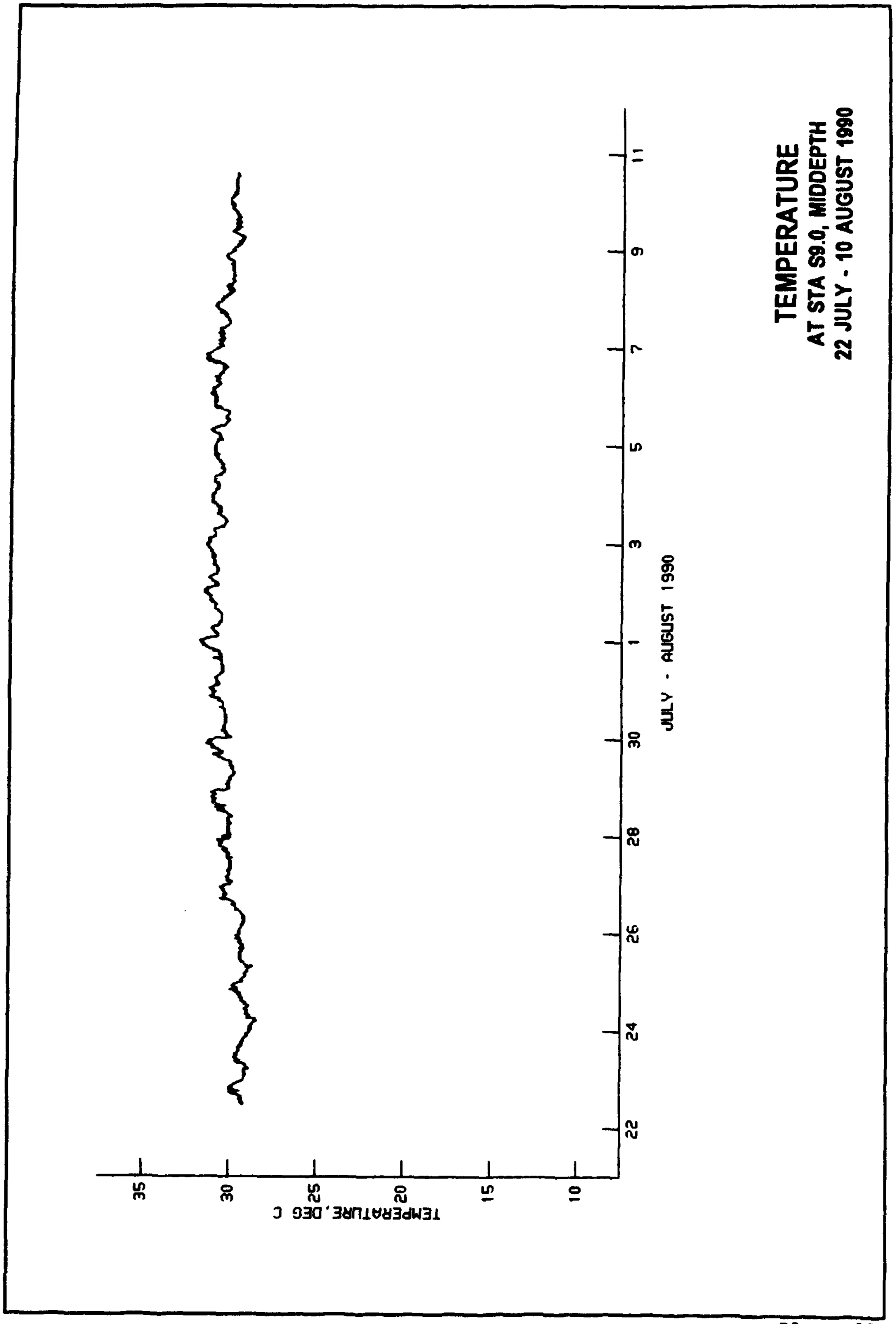
JULY - AUGUST 1990

Plate 219



TEMPERATURE
AT STA S6.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990

Plate 220


TEMPERATURE
AT STA S9.0, MIDDEPTH
22 JULY - 10 AUGUST 1990
TEMPERATURE, DEG C
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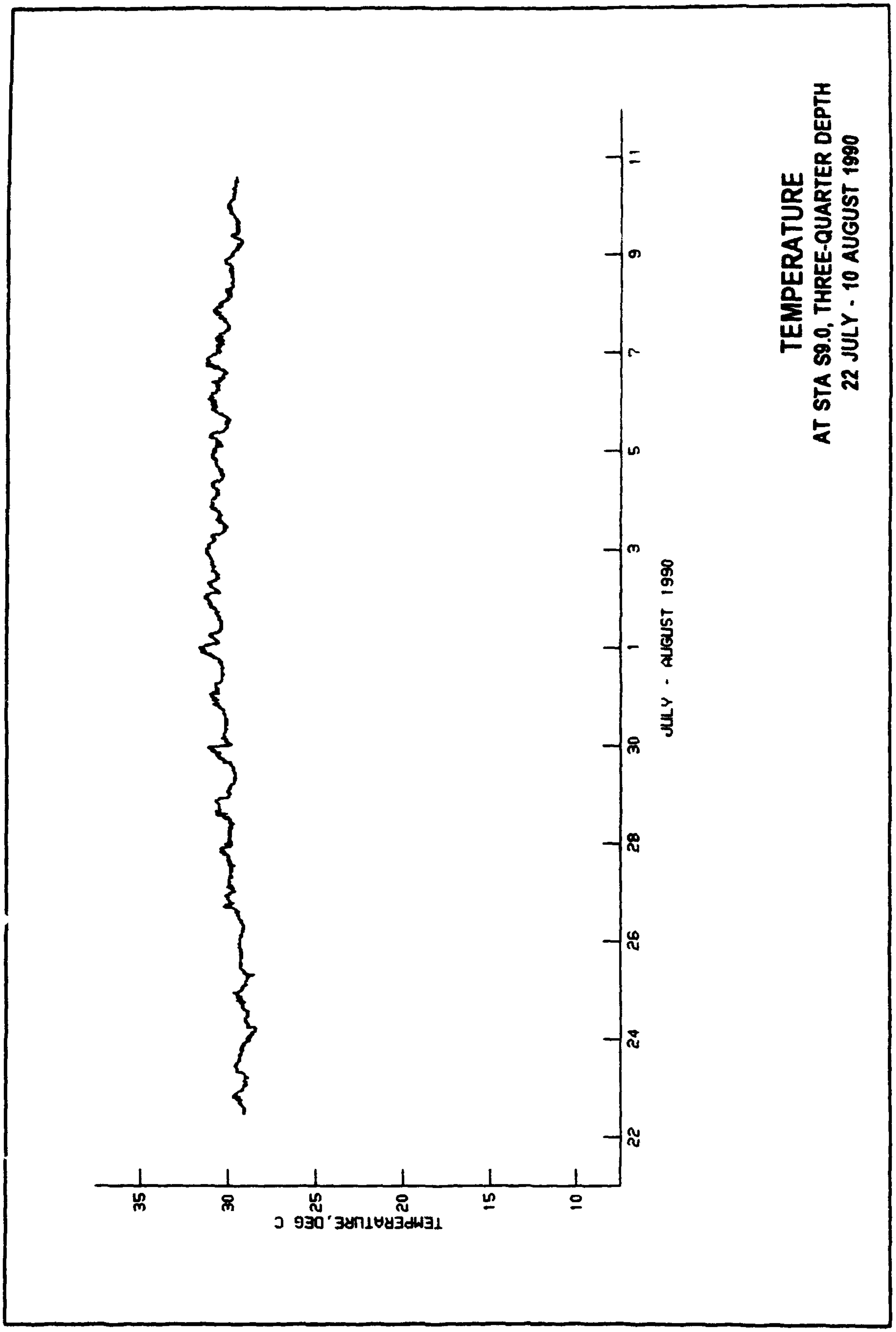
JULY - AUGUST 1990


TEMPERATURE
AT STA S9.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990
TEMPERATURE, DEG C
10
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JULY - AUGUST 1990
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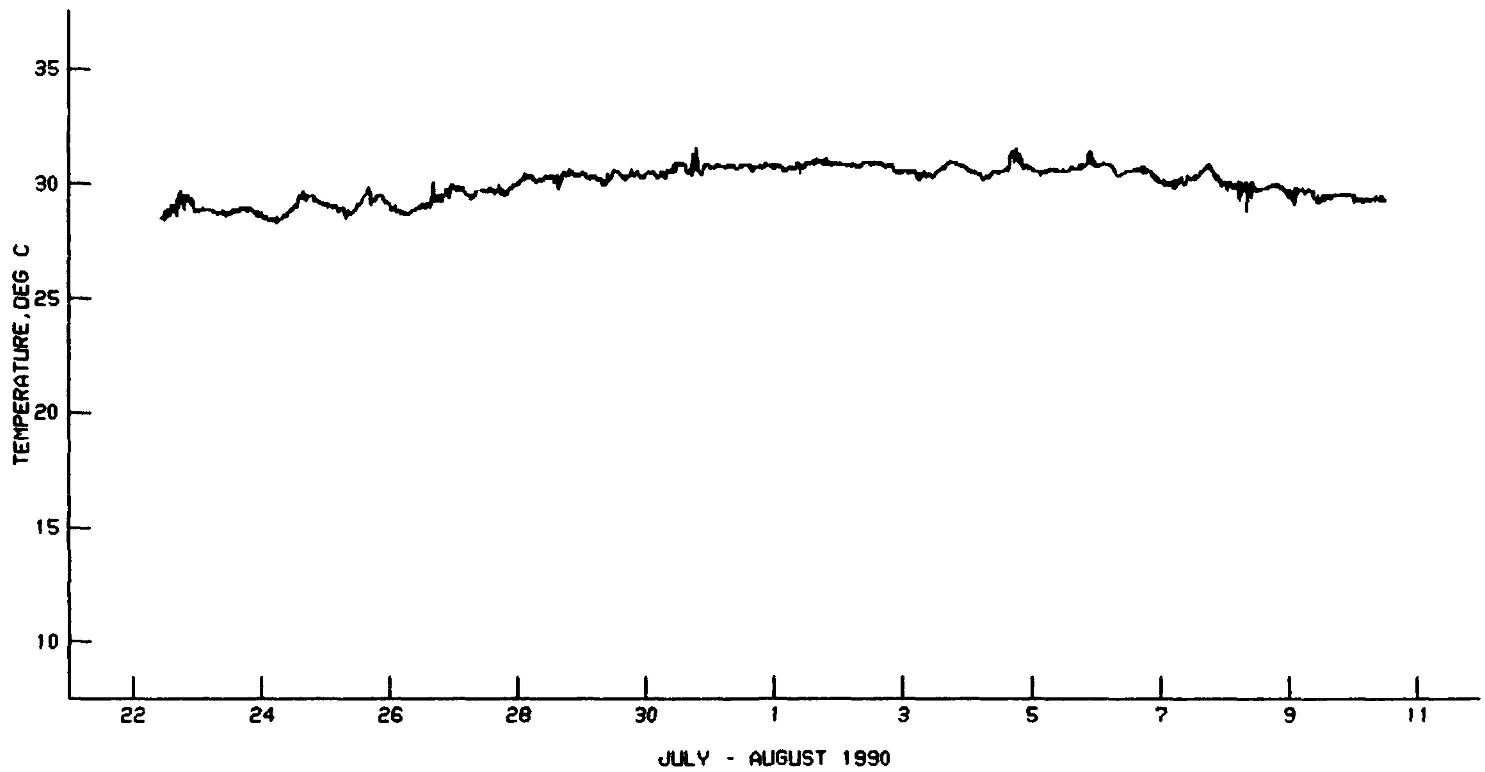
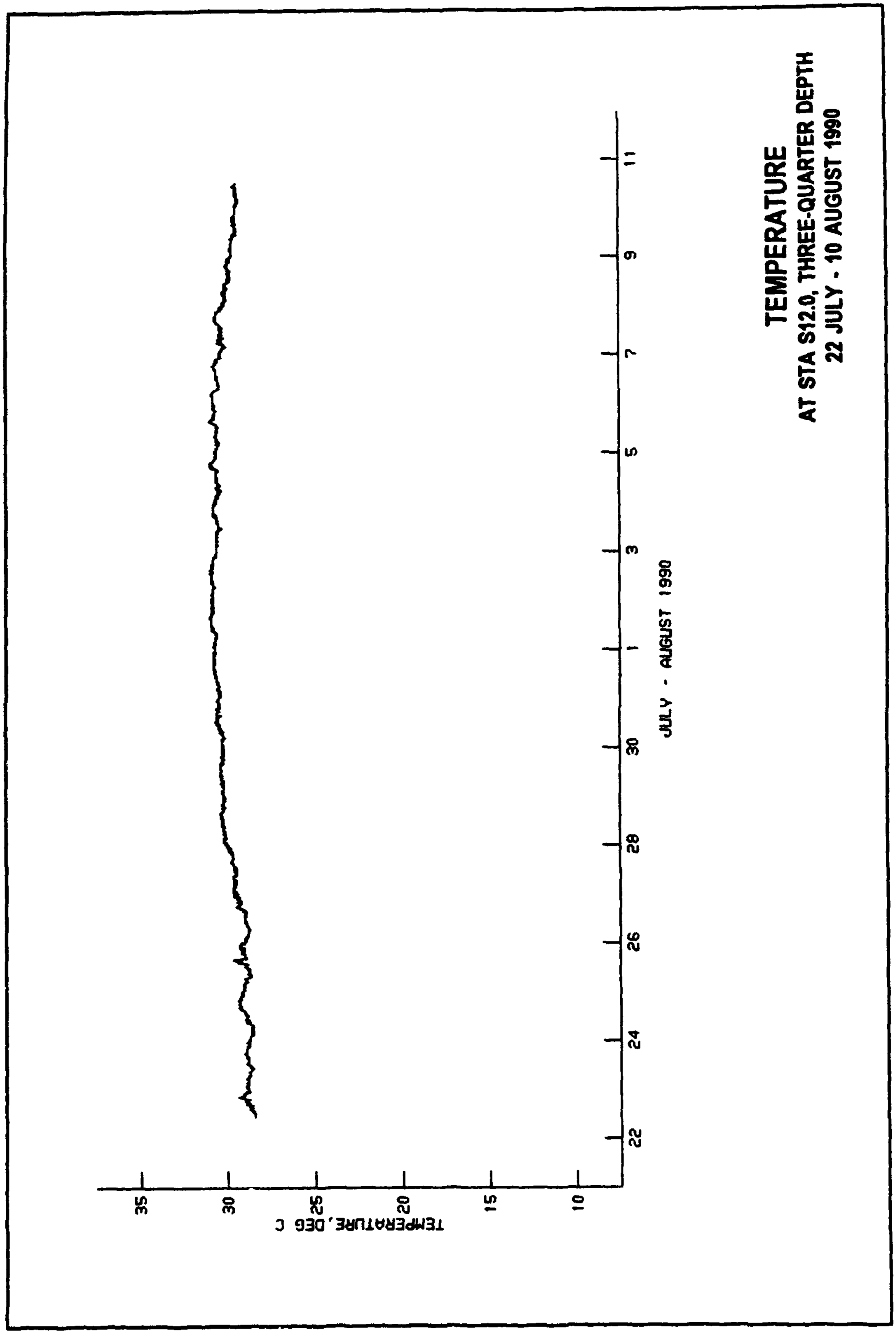
Plate 222



TEMPERATURE
AT STA S12.0, MIDDEPTH
22 JULY - 10 AUGUST 1990


TEMPERATURE
AT STA S12.0, THREE-QUARTER DEPTH
22 JULY - 10 AUGUST 1990
TEMPERATURE, DEG C
35
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JULY - AUGUST 1990
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Plate 224

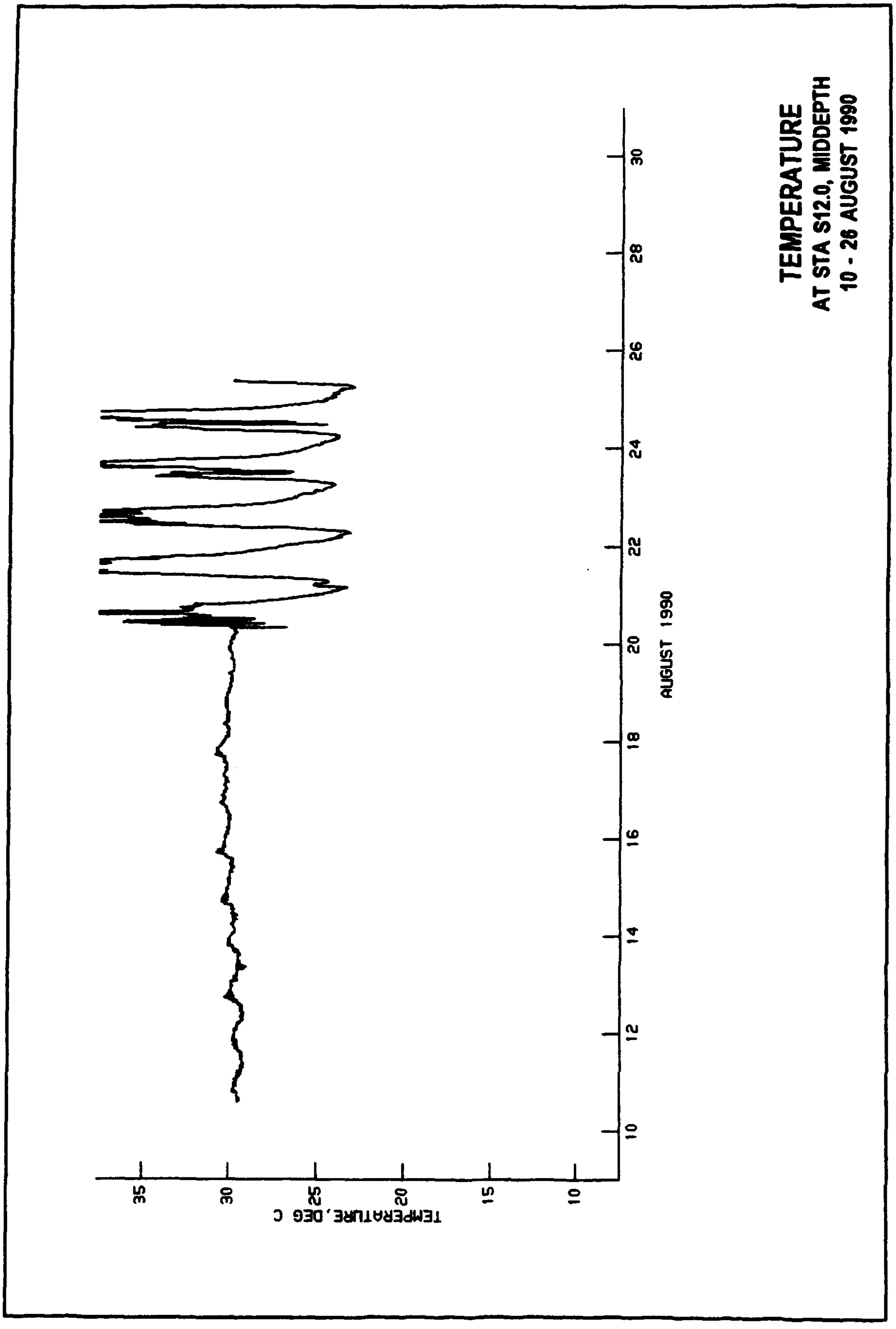
TEMPERATURE
AT STA S12.0, MIDDEPTH
10 - 26 AUGUST 1990
TEMPERATURE, DEG C
AUGUST 1990
35
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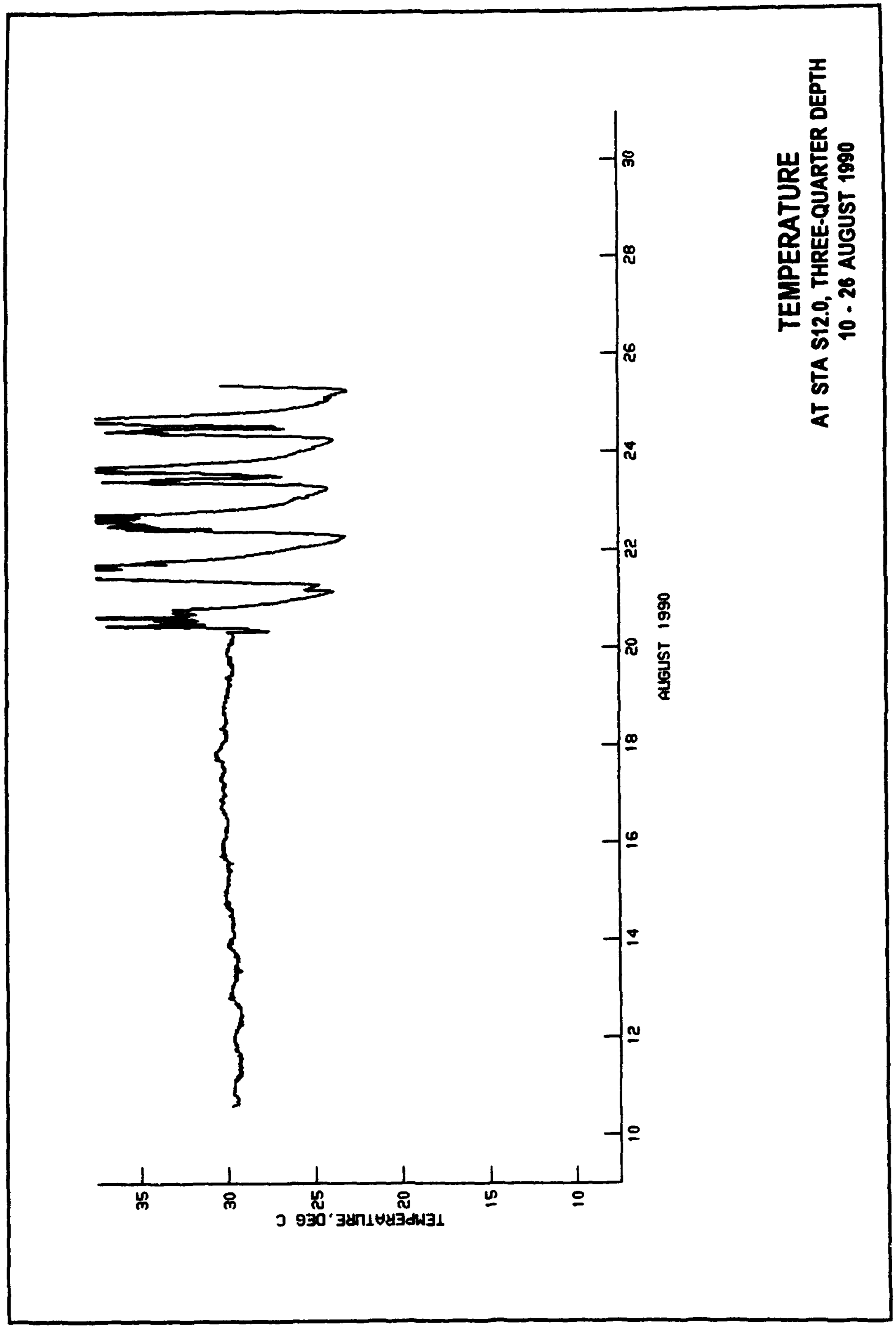
Plate 225


TEMPERATURE
AT STA S12.0, THREE-QUARTER DEPTH
10 - 26 AUGUST 1990
TEMPERATURE, DEG C
35
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AUGUST 1990
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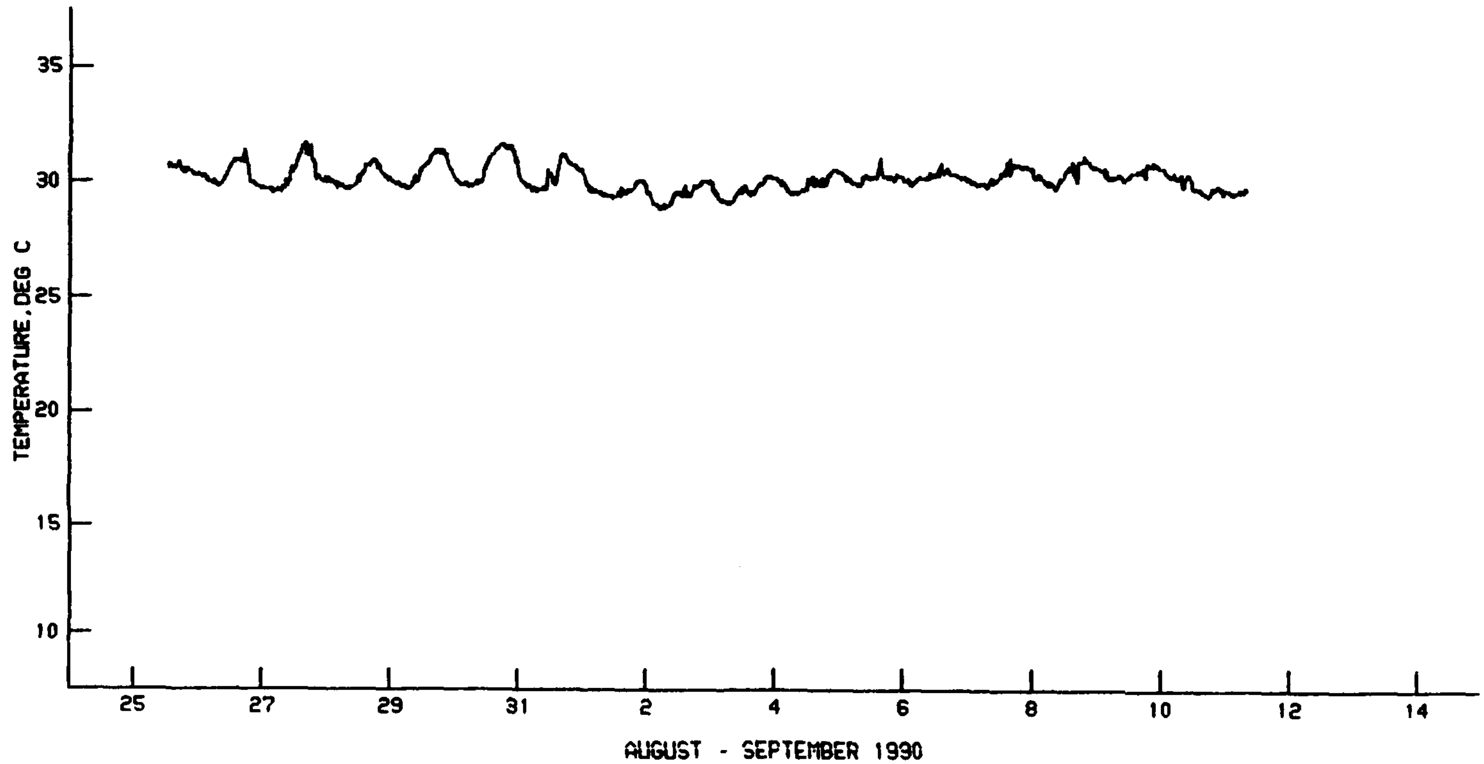
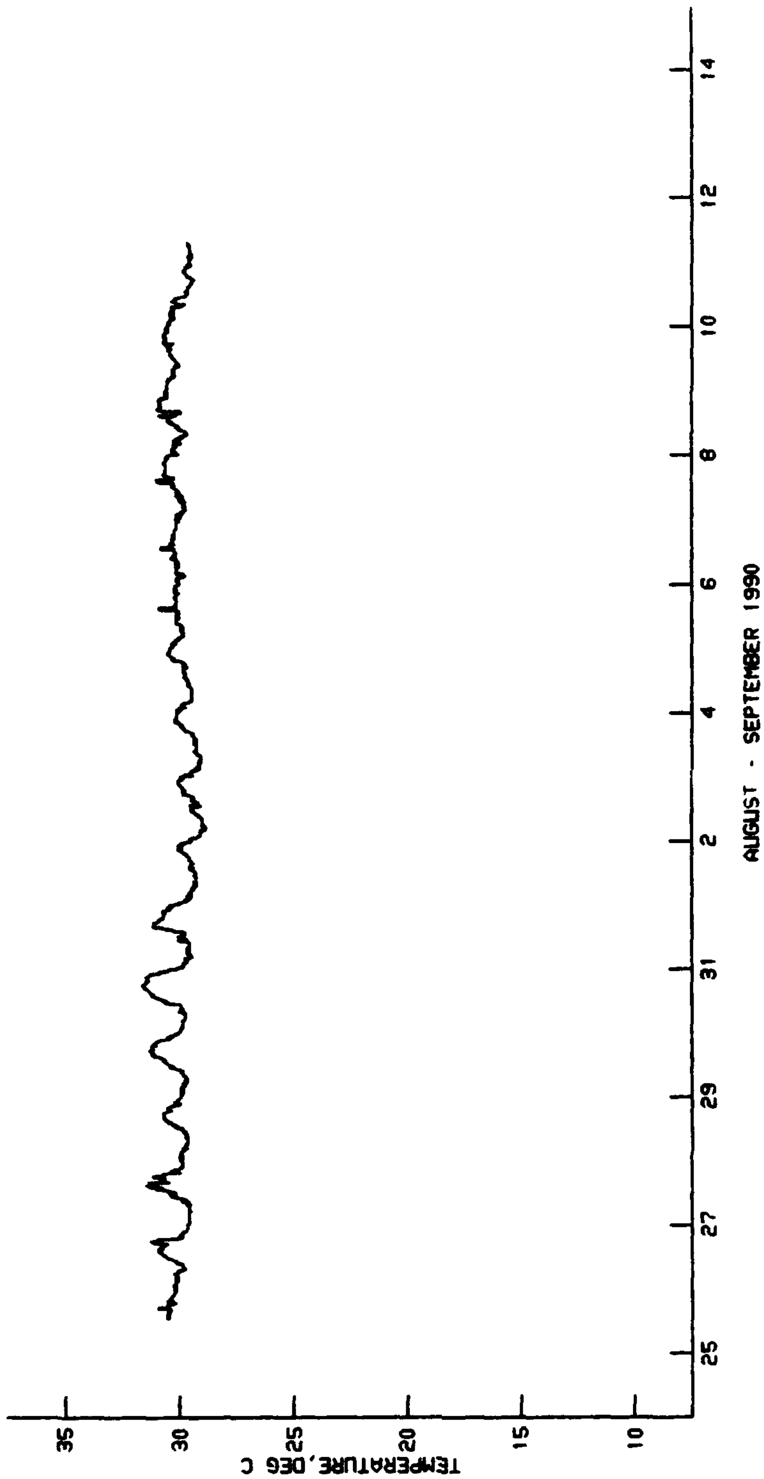
Plate 226

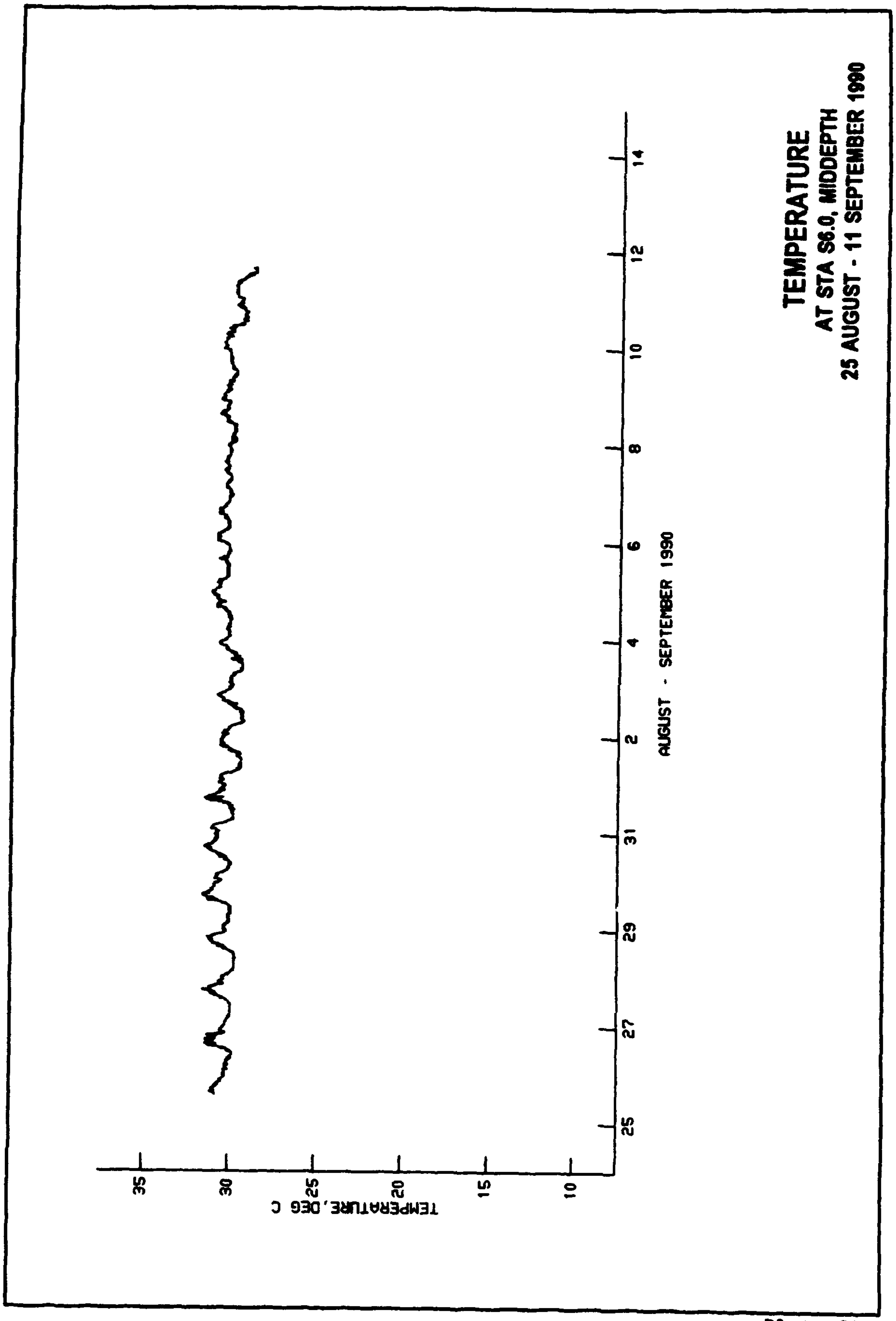


TEMPERATURE
AT STA S2.0, MIDDEPTH
25 AUGUST - 11 SEPTEMBER 1990



TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
25 AUGUST - 11 SEPTEMBER 1990

Plate 228


TEMPERATURE
AT STA S6.0, MIDDEPTH
25 AUGUST - 11 SEPTEMBER 1990
TEMPERATURE, DEG C
10
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AUGUST - SEPTEMBER 1990
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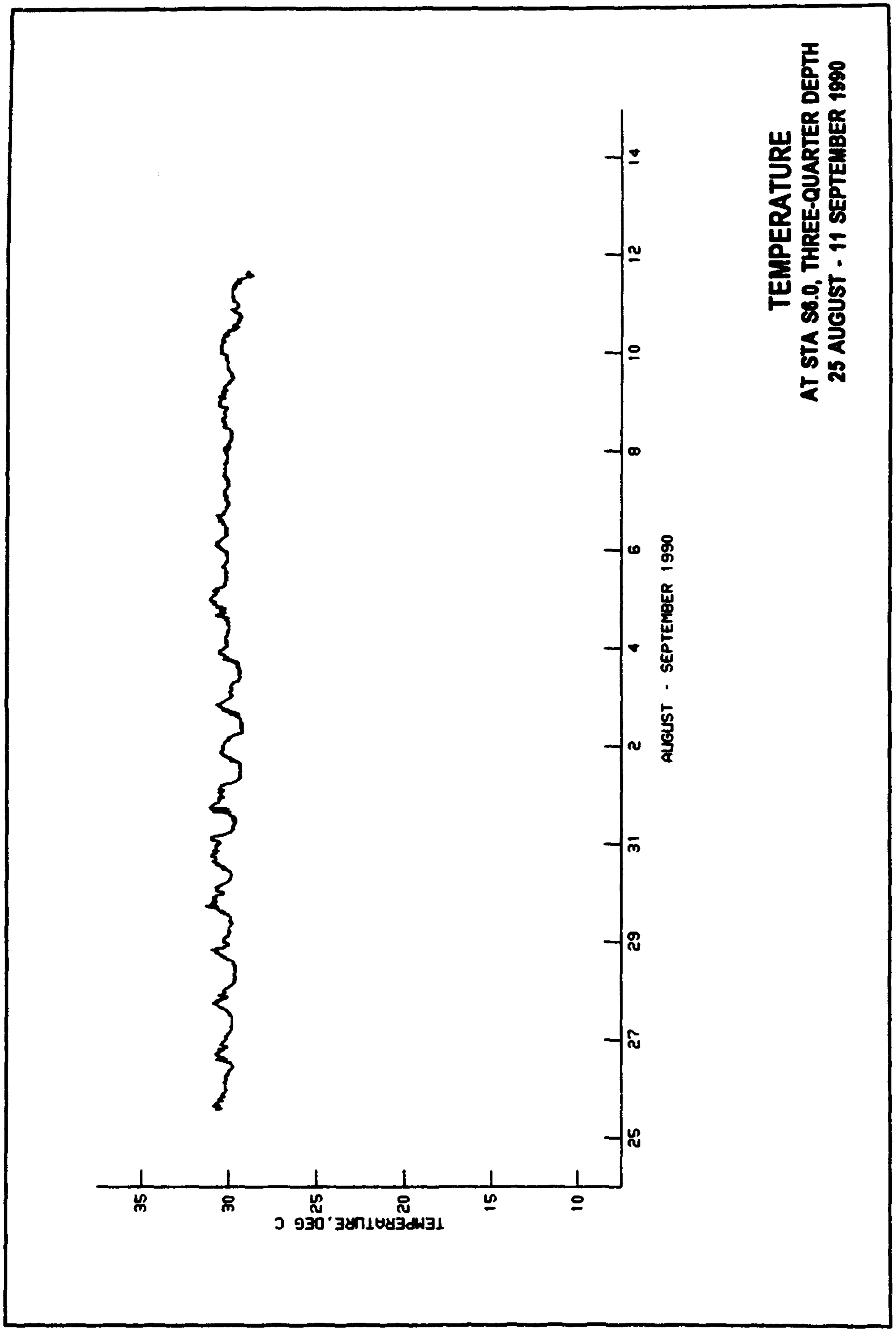
TEMPERATURE
AT STA S8.0, THREE-QUARTER DEPTH
25 AUGUST - 11 SEPTEMBER 1990
TEMPERATURE, DEG C
10
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AUGUST - SEPTEMBER 1990
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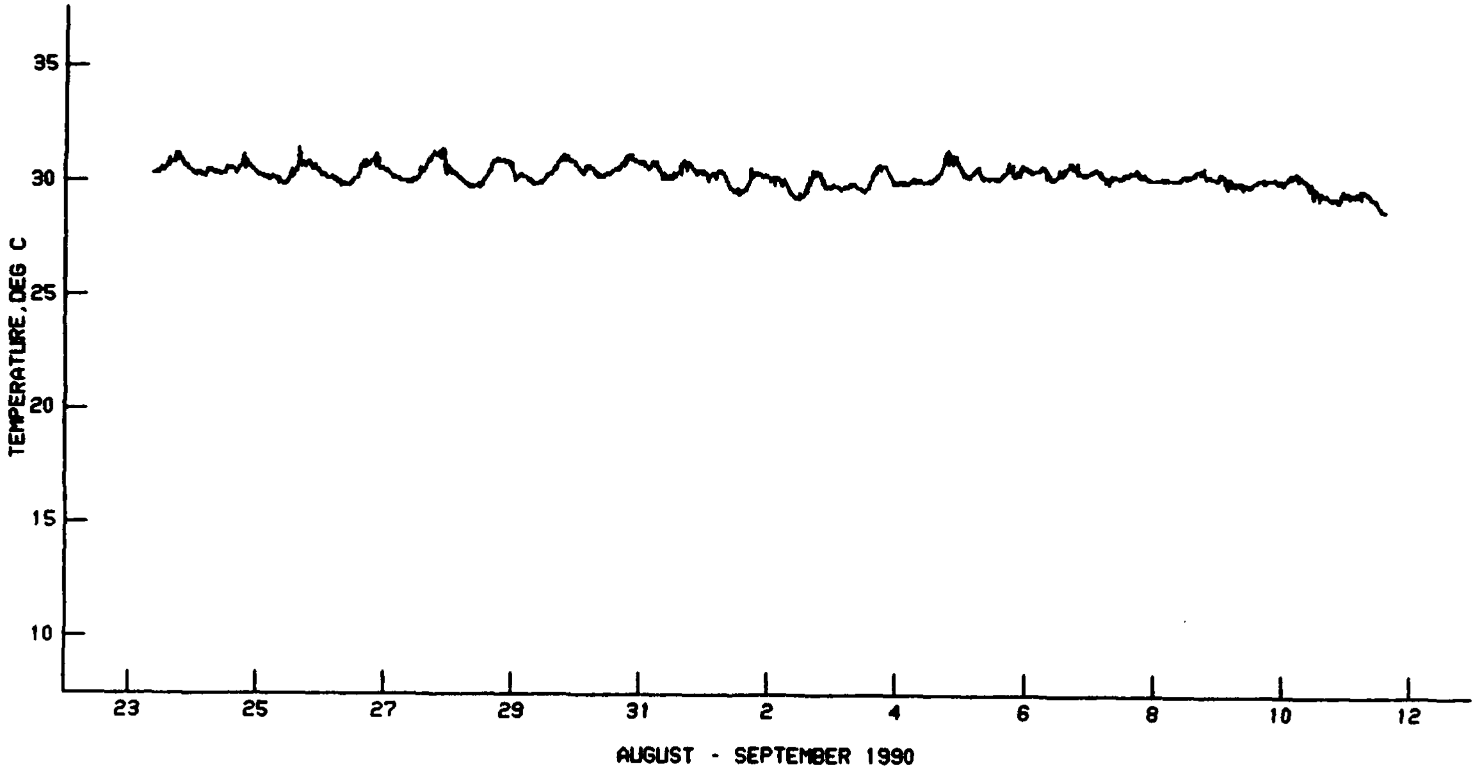
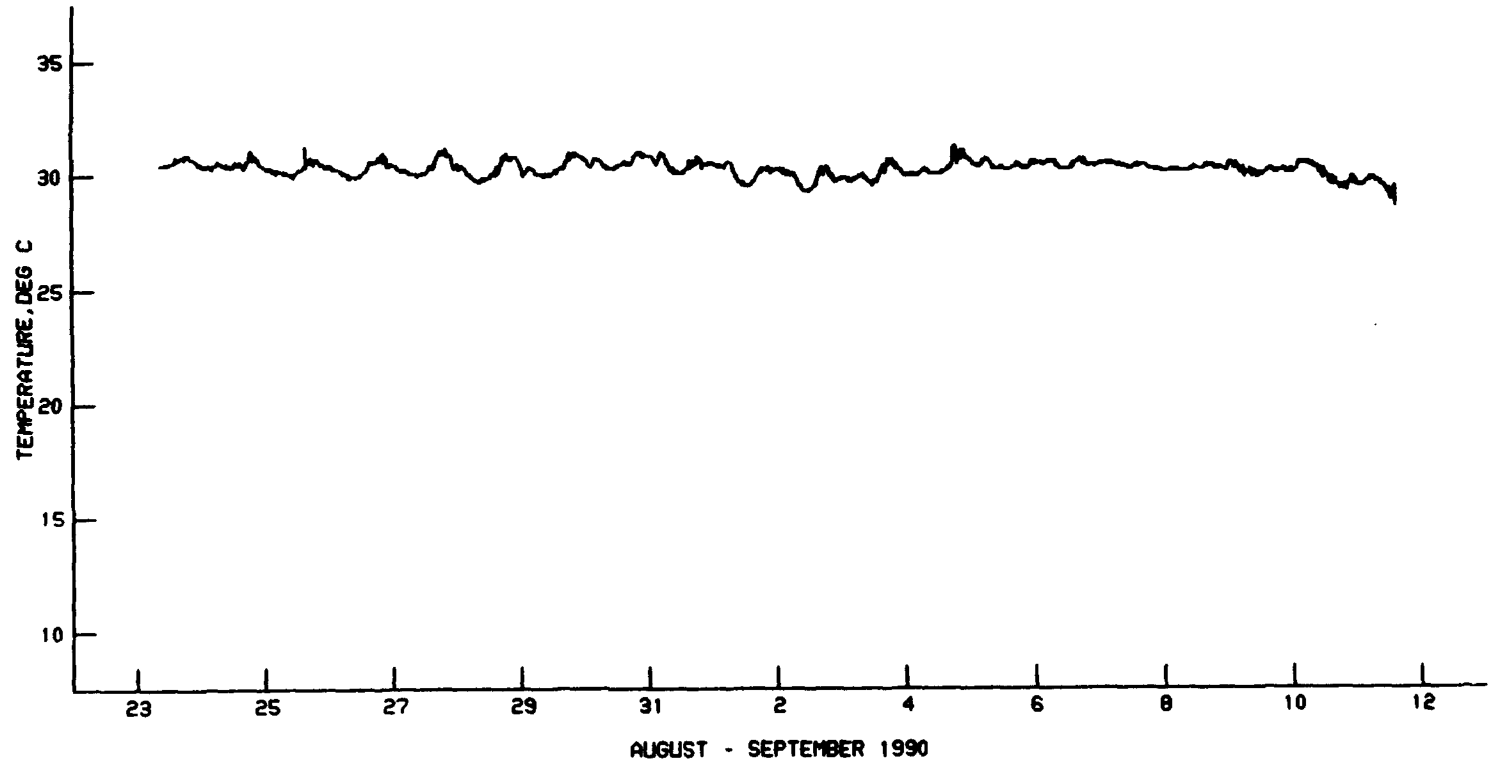
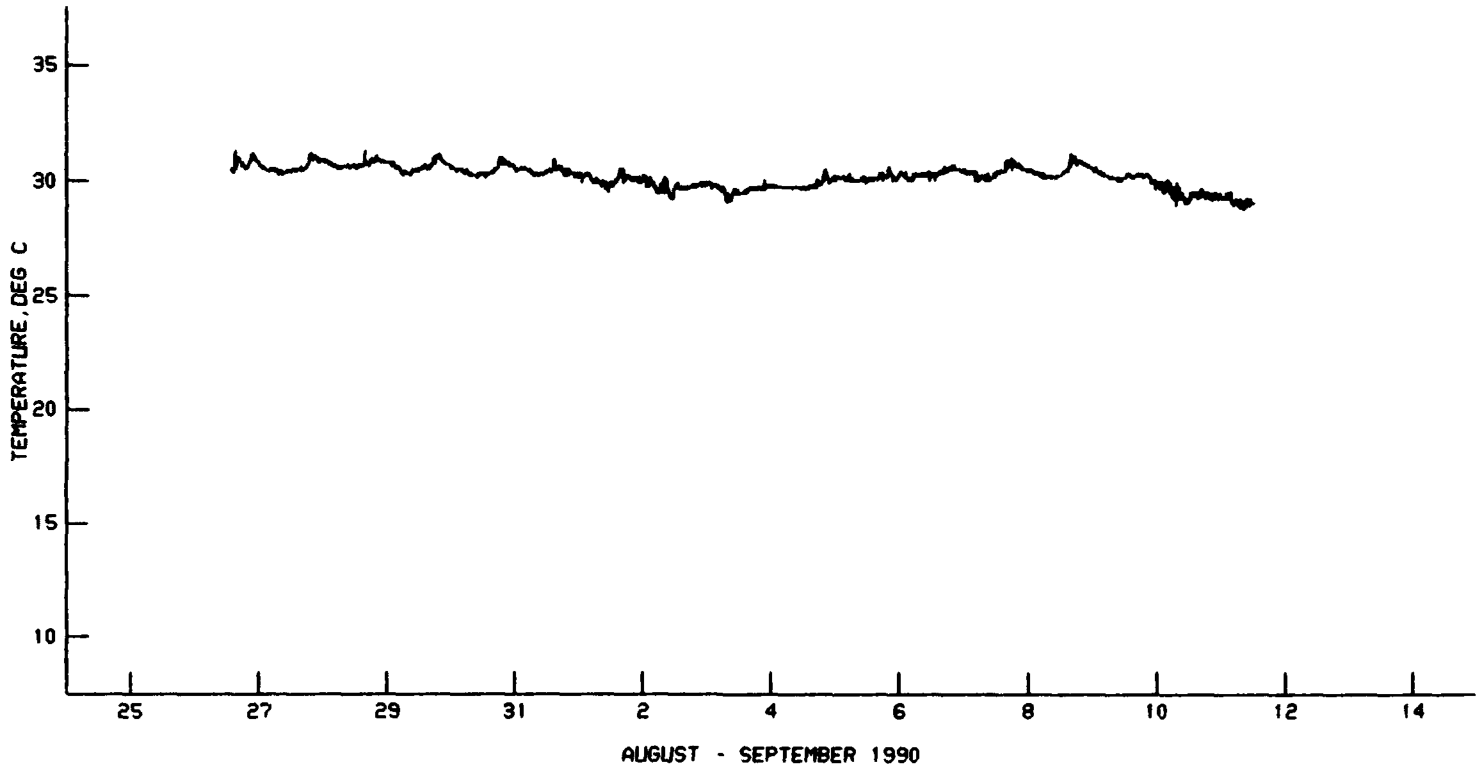
Plate 230



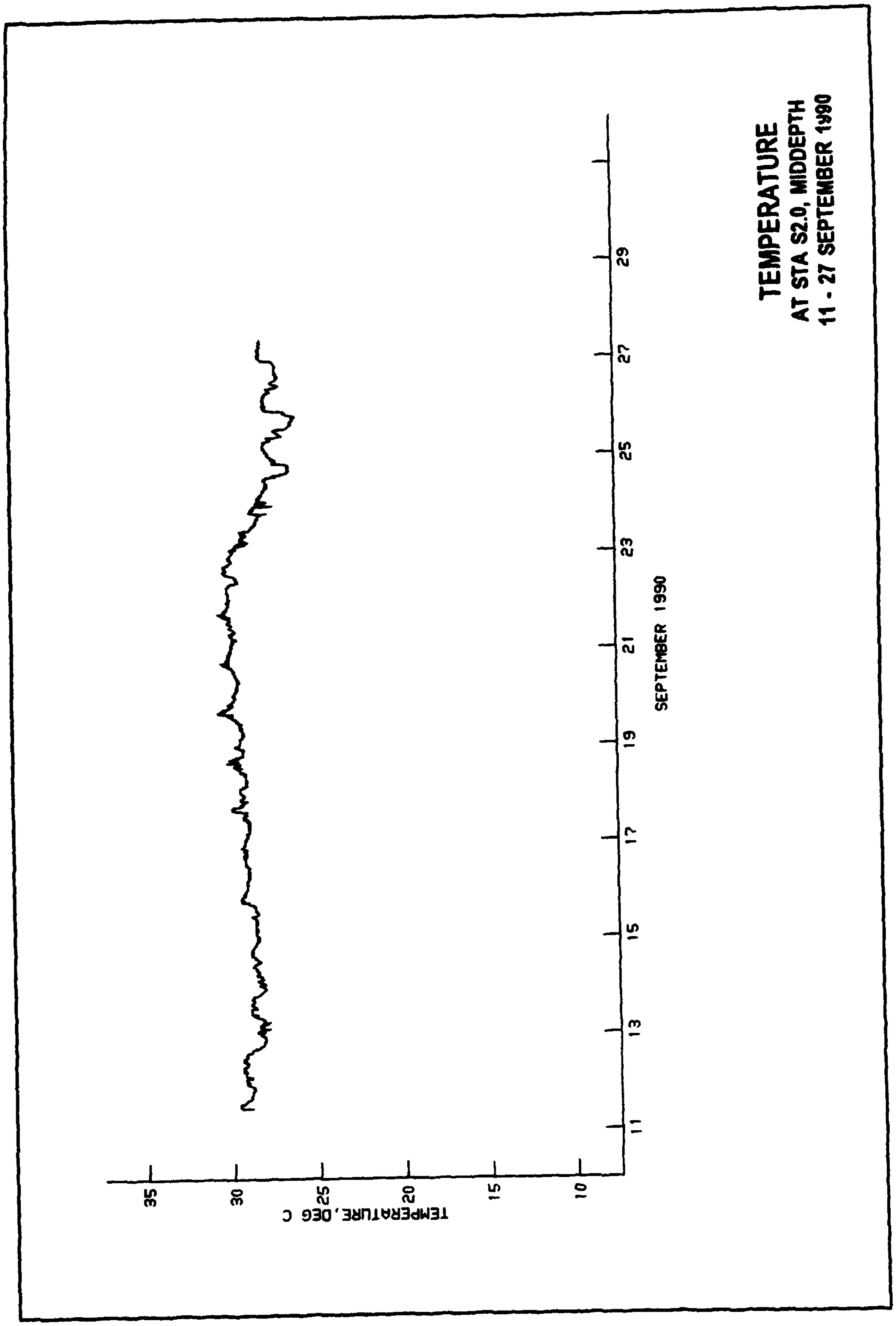
TEMPERATURE
AT STA S9.0, MIDDEPTH
23 AUGUST - 11 SEPTEMBER 1990



TEMPERATURE
AT STA S9.0, THREE-QUARTER DEPTH
23 AUGUST - 11 SEPTEMBER 1990



TEMPERATURE
AT STA S12.0, THREE-QUARTER DEPTH
26 AUGUST - 11 SEPTEMBER 1990


TEMPERATURE
AT STA S2.0, MIDDEPTH
11 - 27 SEPTEMBER 1990
TEMPERATURE, DEG C
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SEPTEMBER 1990
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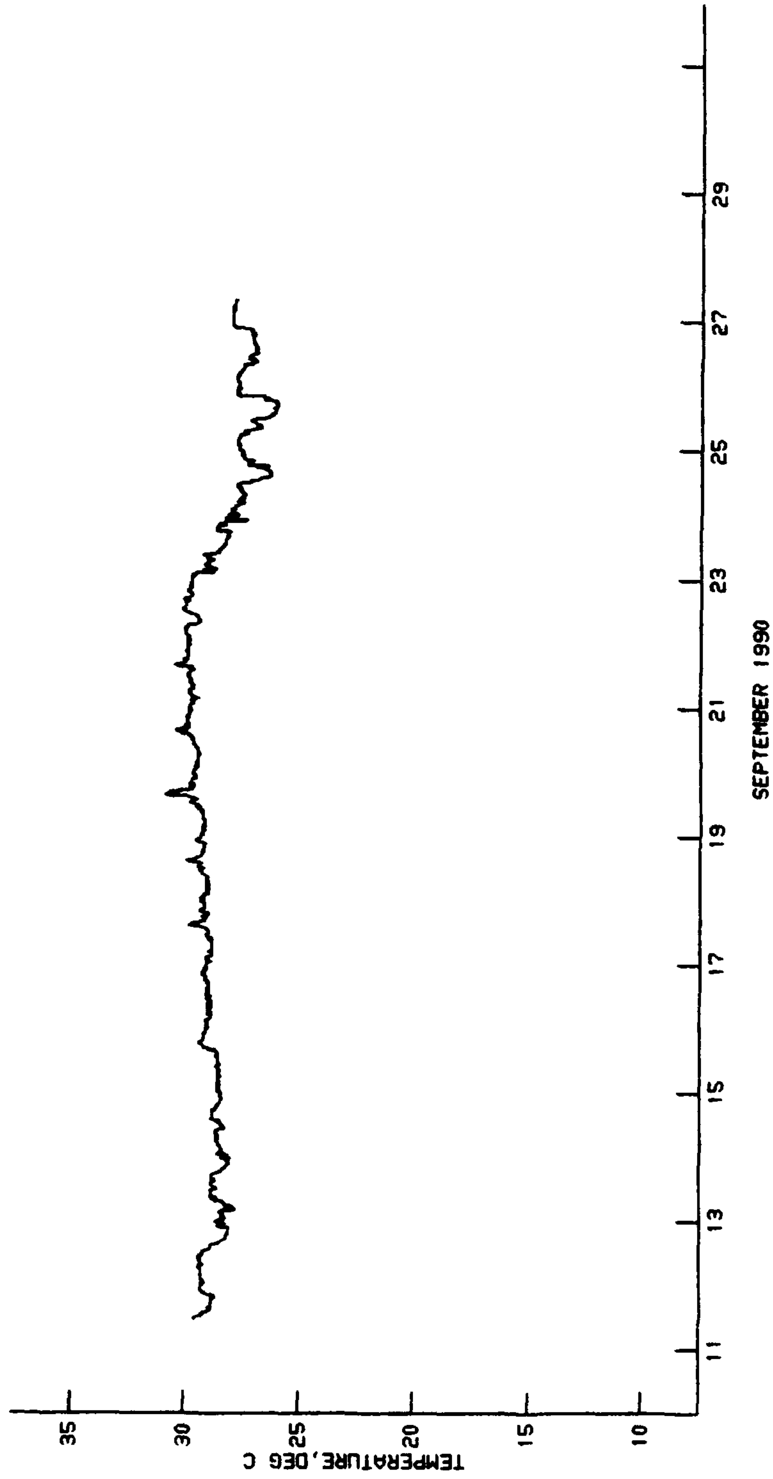
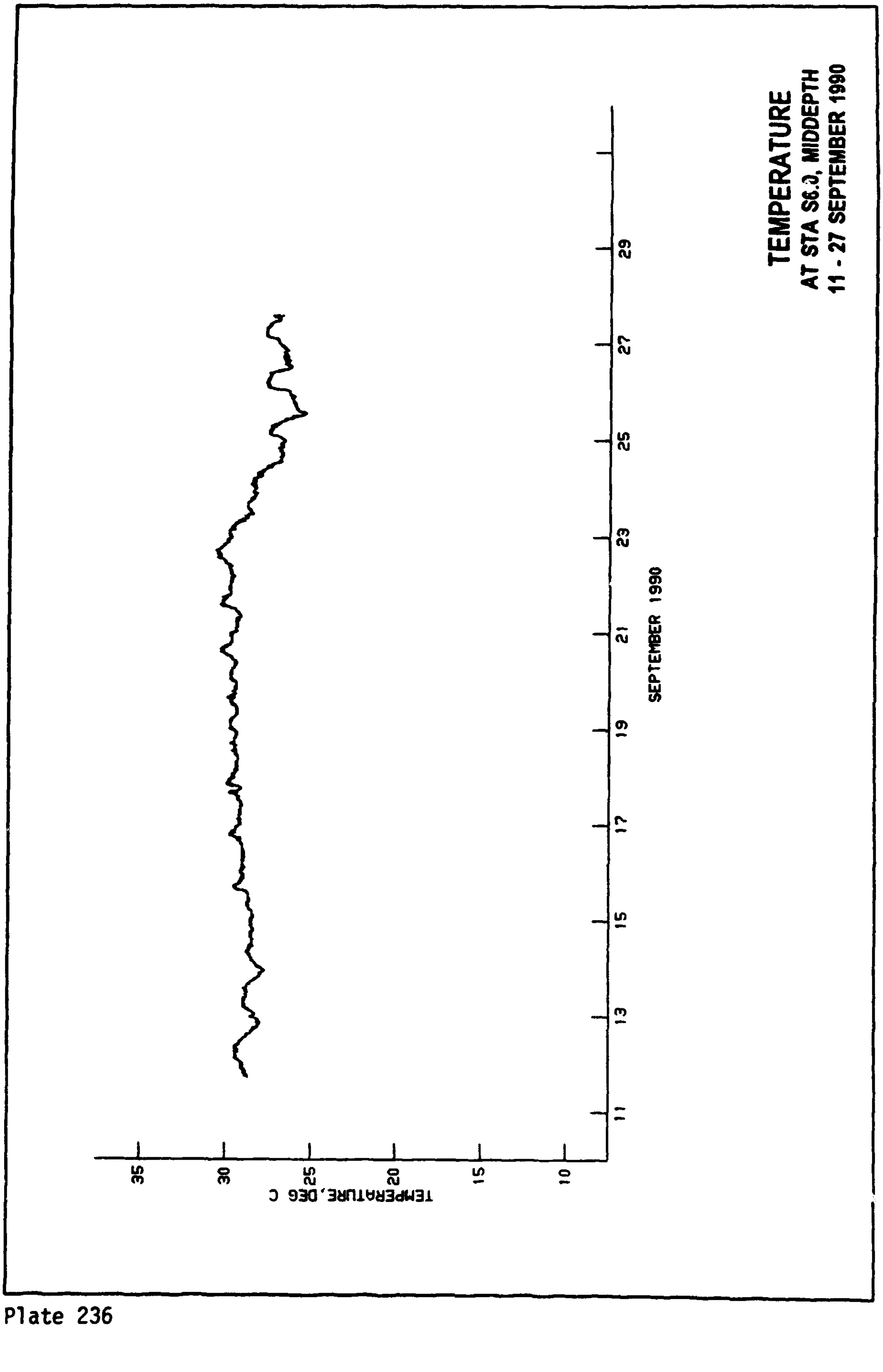
Plate 234



TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
11 - 27 SEPTEMBER 1990

Plate 235


TEMPERATURE
AT STA S6.0, MIDDEPTH
11 - 27 SEPTEMBER 1990
TEMPERATURE, DEG C
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SEPTEMBER 1990
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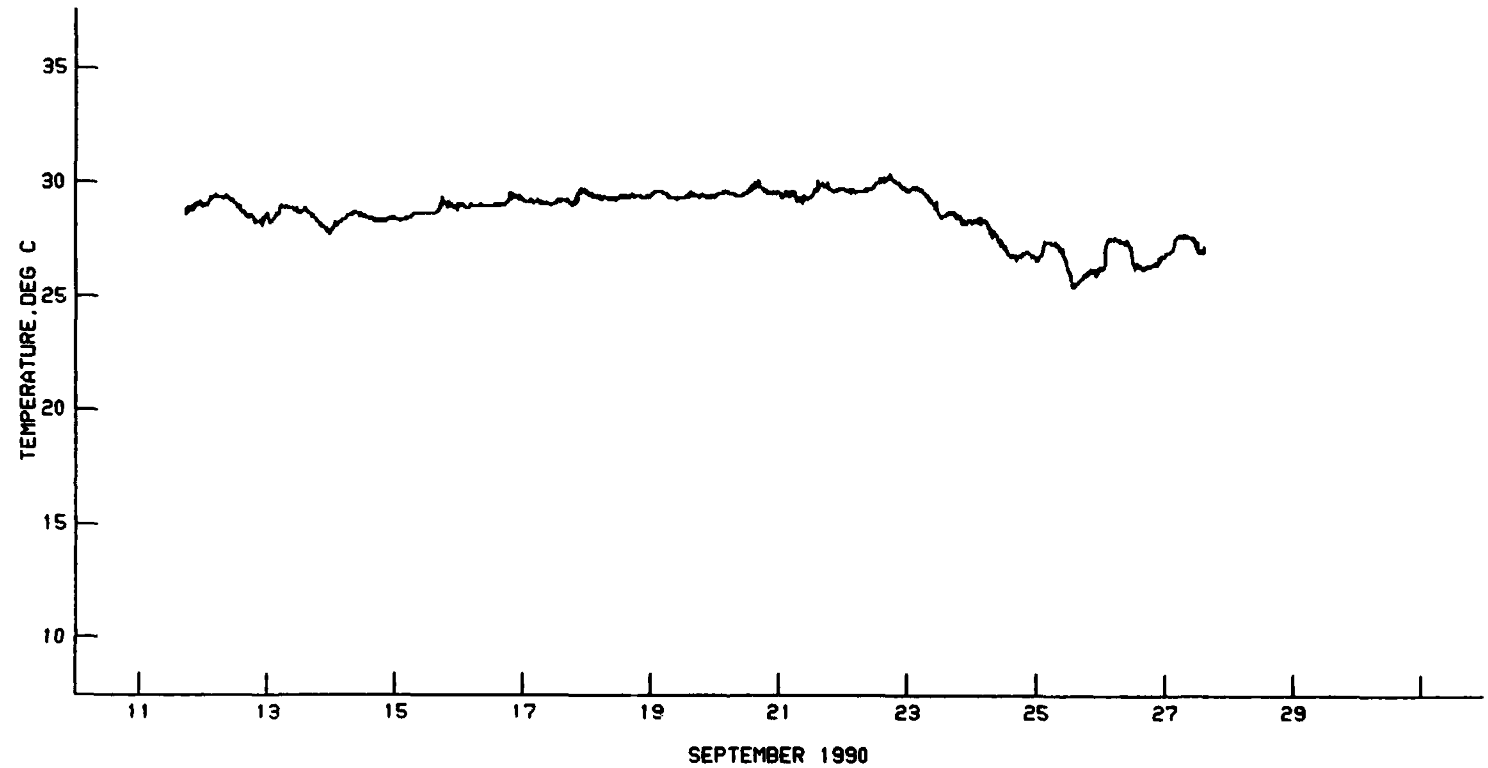
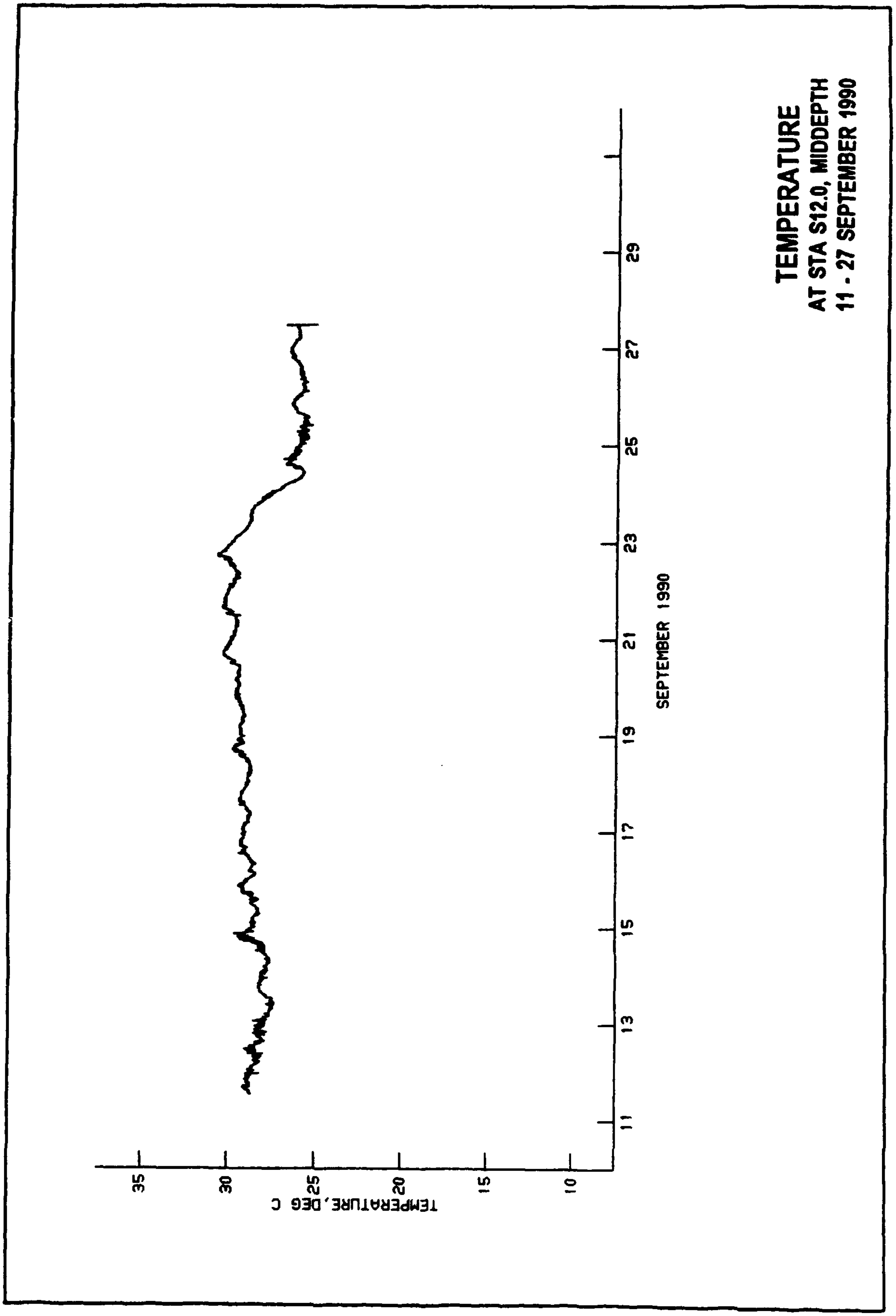
Plate 236



TEMPERATURE
AT STA S6.0, THREE-QUARTER DEPTH
11 - 27 SEPTEMBER 1990


TEMPERATURE
AT STA S12.0, MIDDEPTH
11 - 27 SEPTEMBER 1990
TEMPERATURE, DEG C
35
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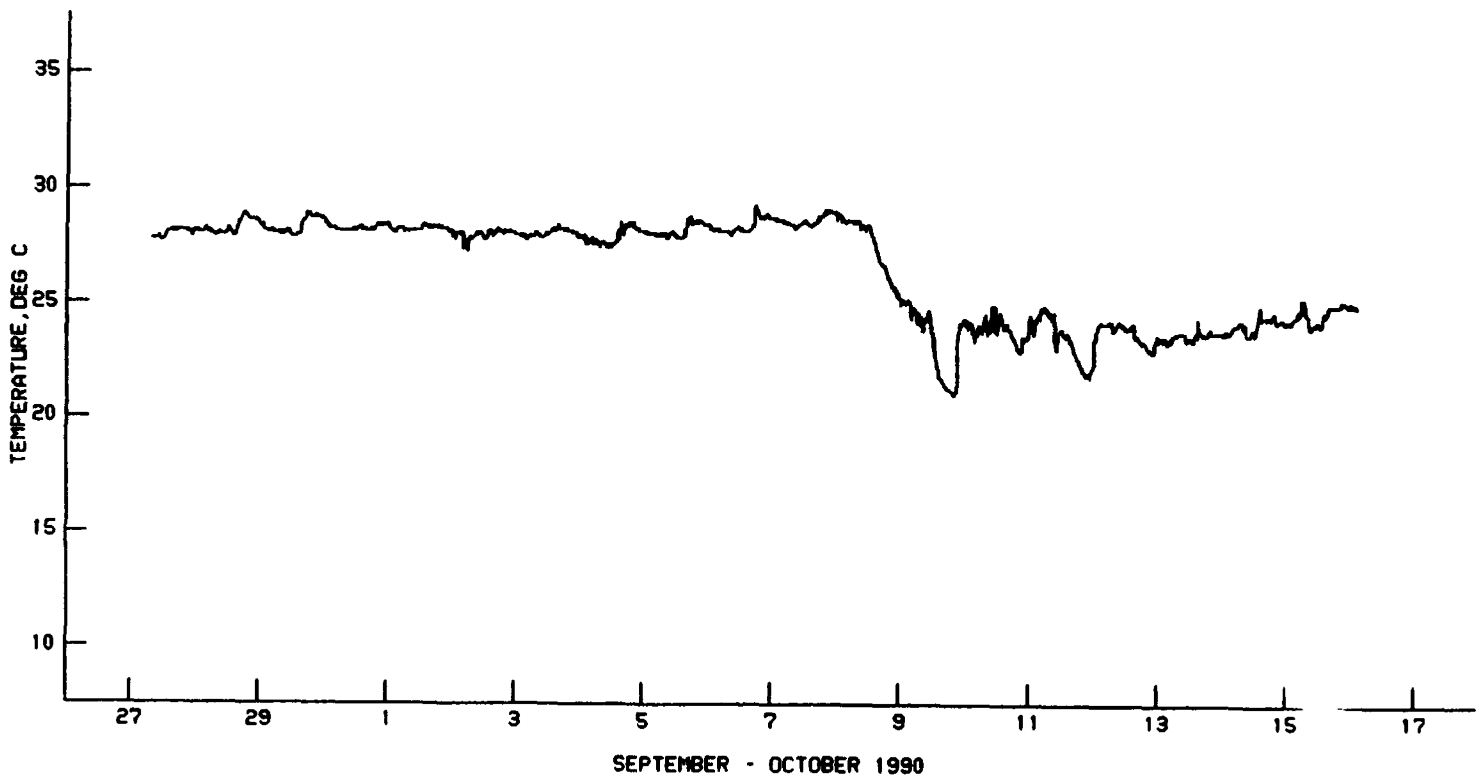
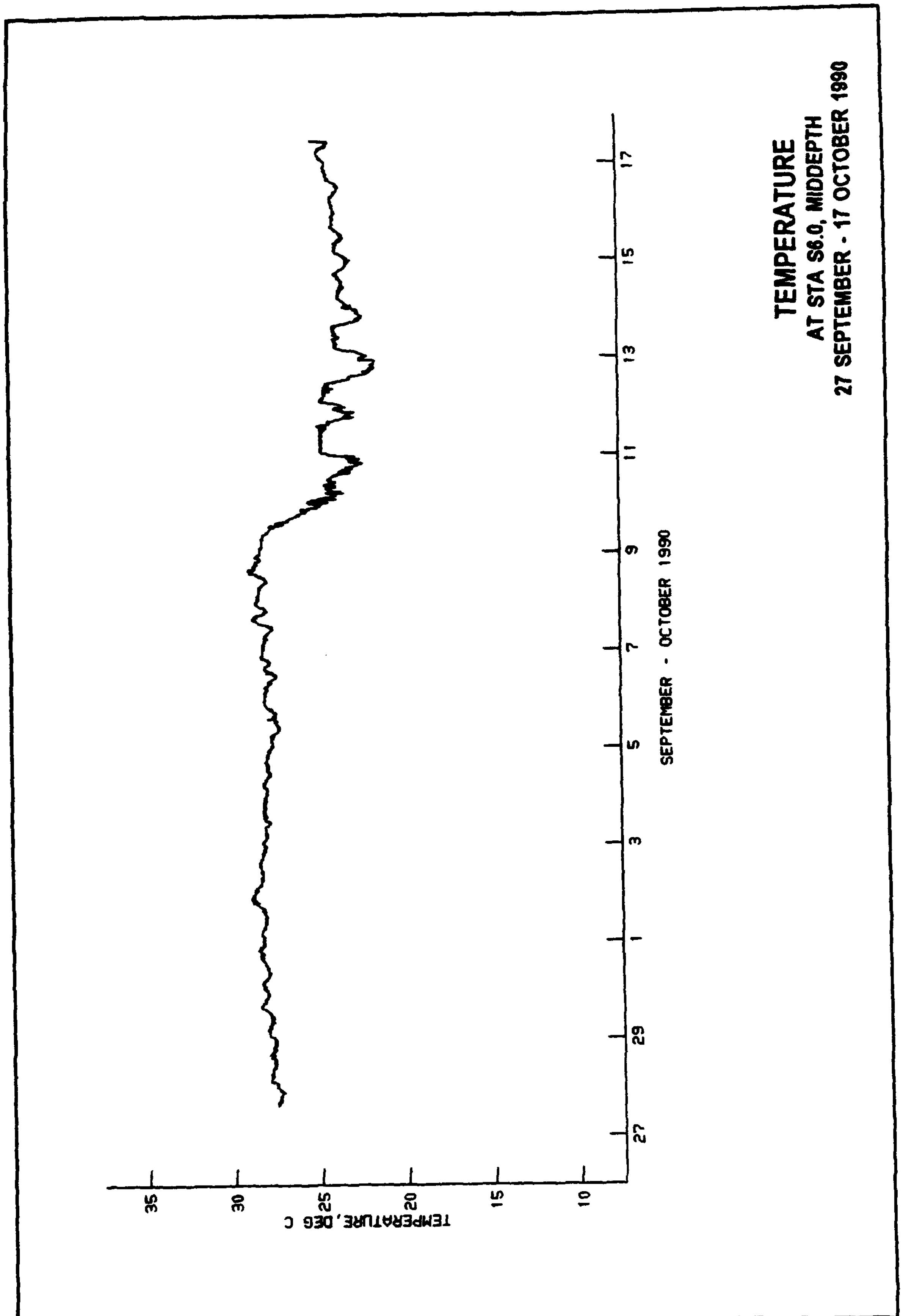
SEPTEMBER 1990

Plate 238



TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
27 SEPTEMBER - 17 OCTOBER 1990


TEMPERATURE
AT STA S8.0, MIDDEPTH
27 SEPTEMBER - 17 OCTOBER 1990
TEMPERATURE, DEG C
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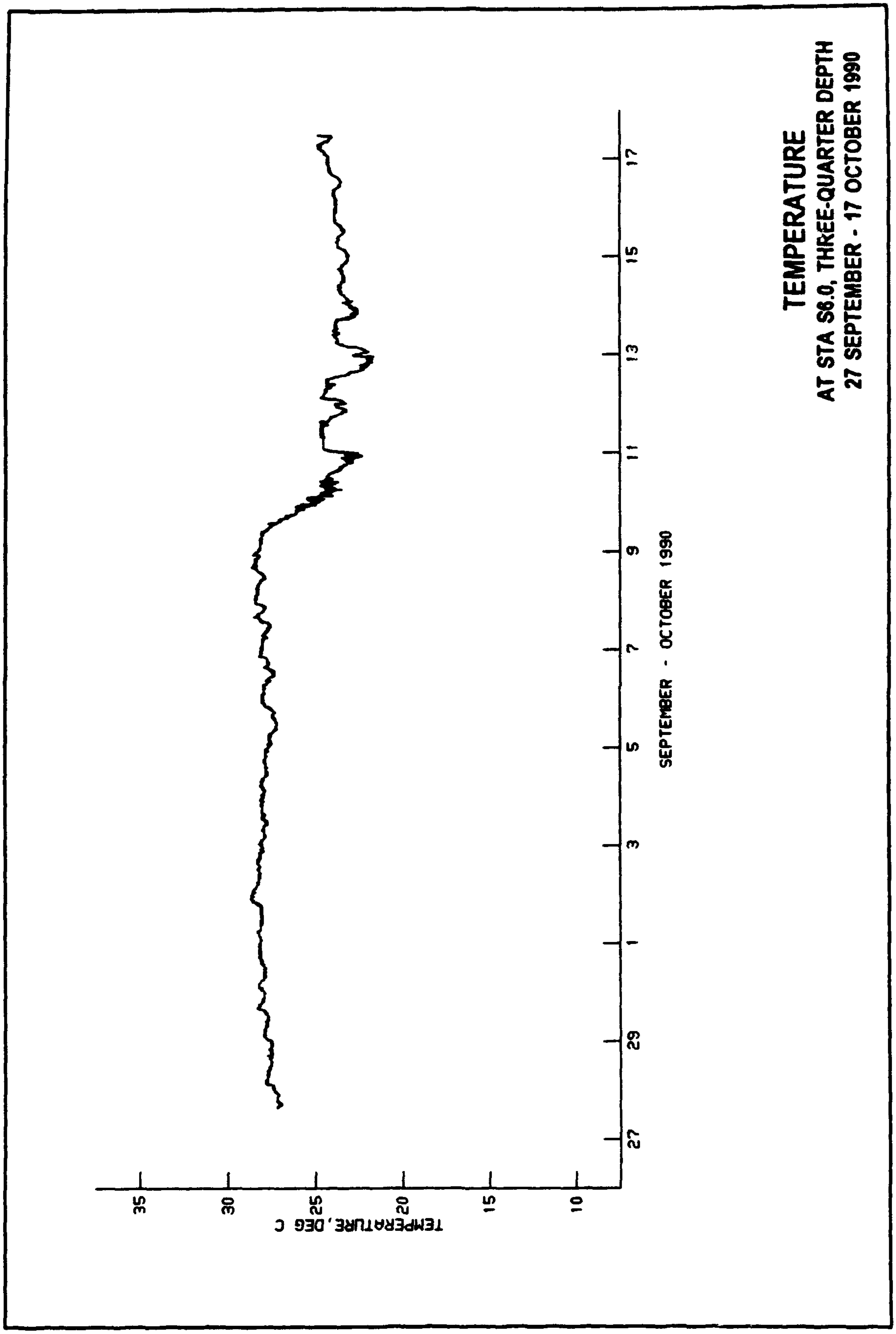
SEPTEMBER - OCTOBER 1990

Plate 240


TEMPERATURE
AT STA S6.0, THREE-QUARTER DEPTH
27 SEPTEMBER - 17 OCTOBER 1990
TEMPERATURE, DEG C
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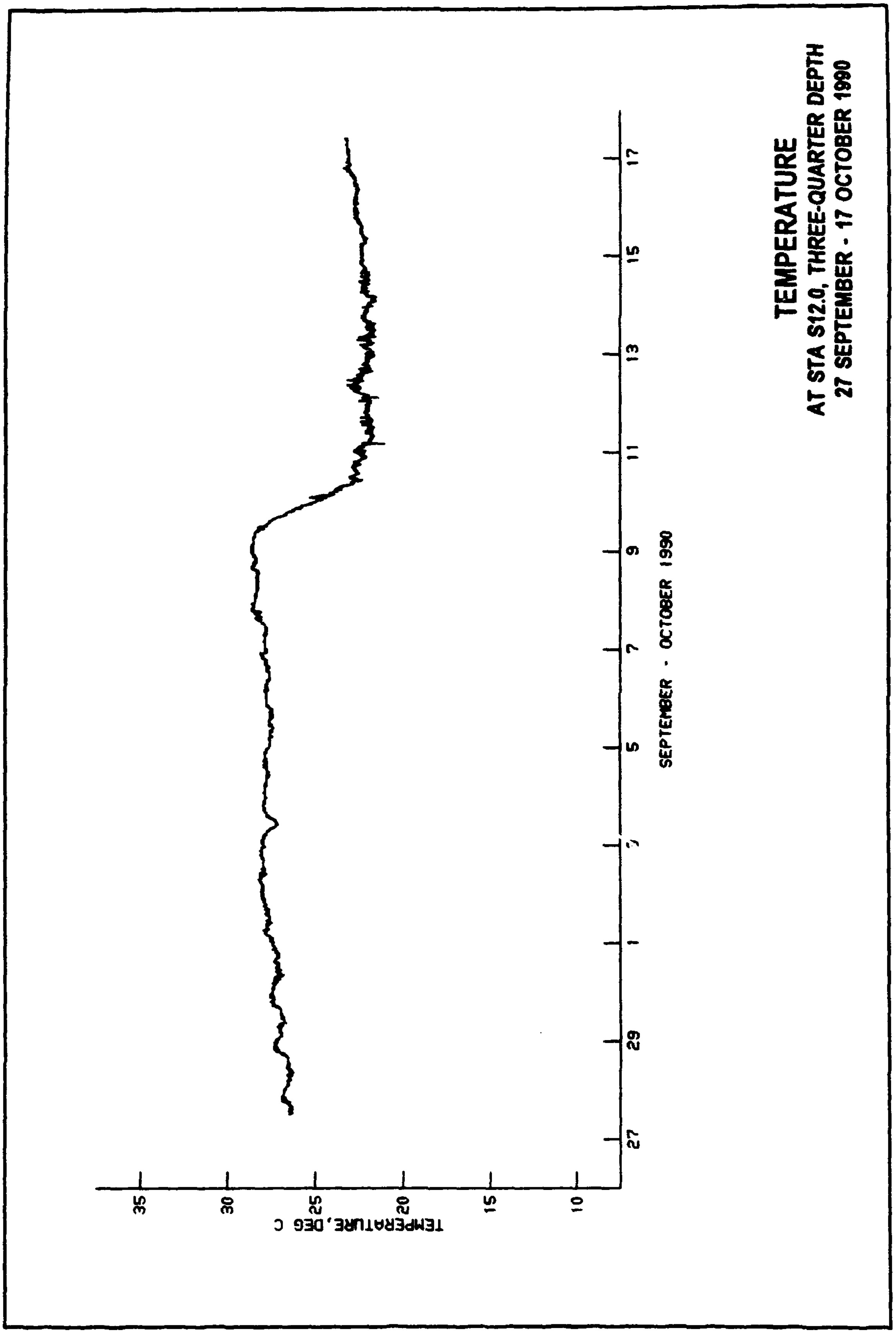
SEPTEMBER - OCTOBER 1990


TEMPERATURE
AT STA S12.0, THREE-QUARTER DEPTH
27 SEPTEMBER - 17 OCTOBER 1990
TEMPERATURE, DEG C
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SEPTEMBER - OCTOBER 1990
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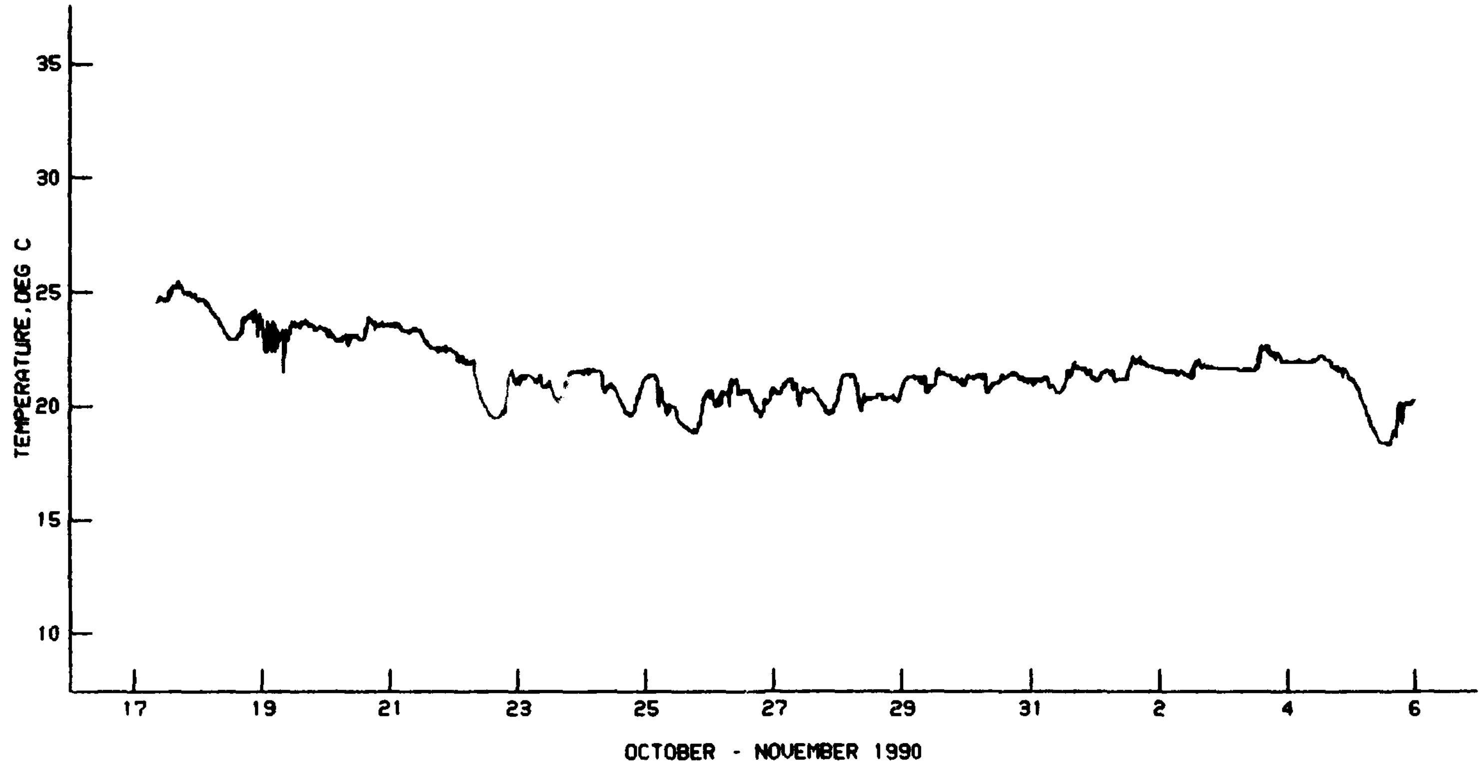
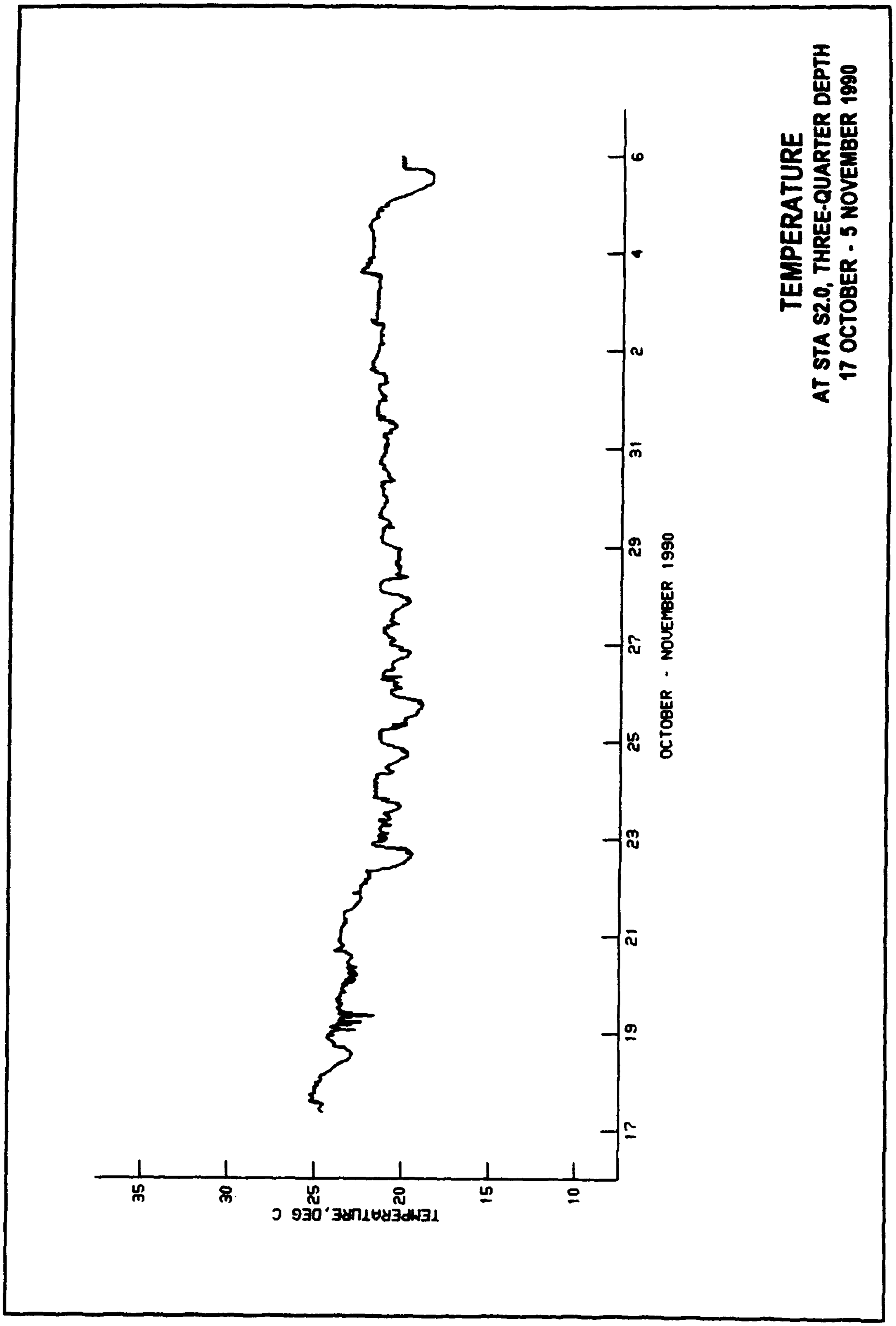
Plate 242



TEMPERATURE
AT STA S2.6, MIDDEPTH
17 OCTOBER - 5 NOVEMBER 1990


TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
17 OCTOBER - 5 NOVEMBER 1990
TEMPERATURE, DEG C
35
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OCTOBER - NOVEMBER 1990
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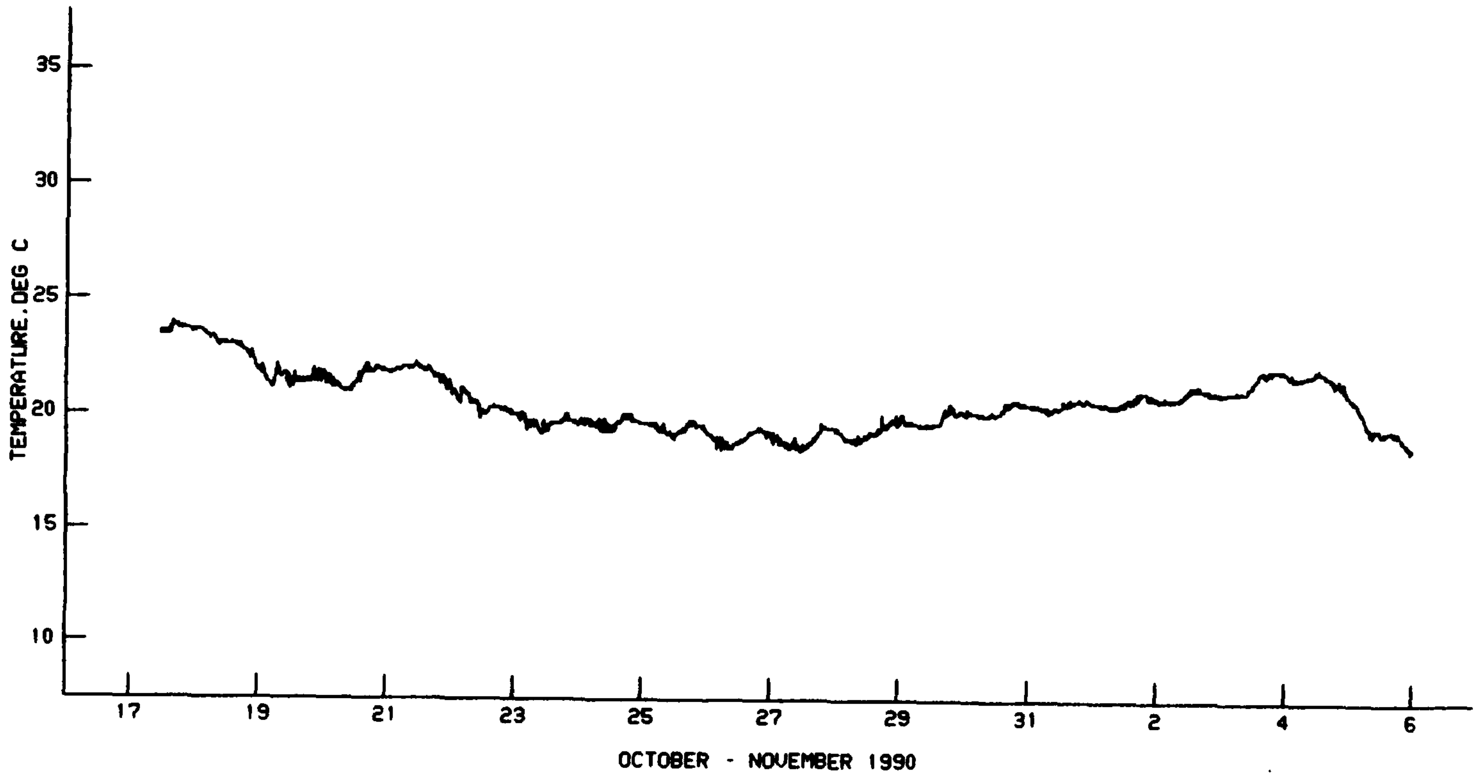
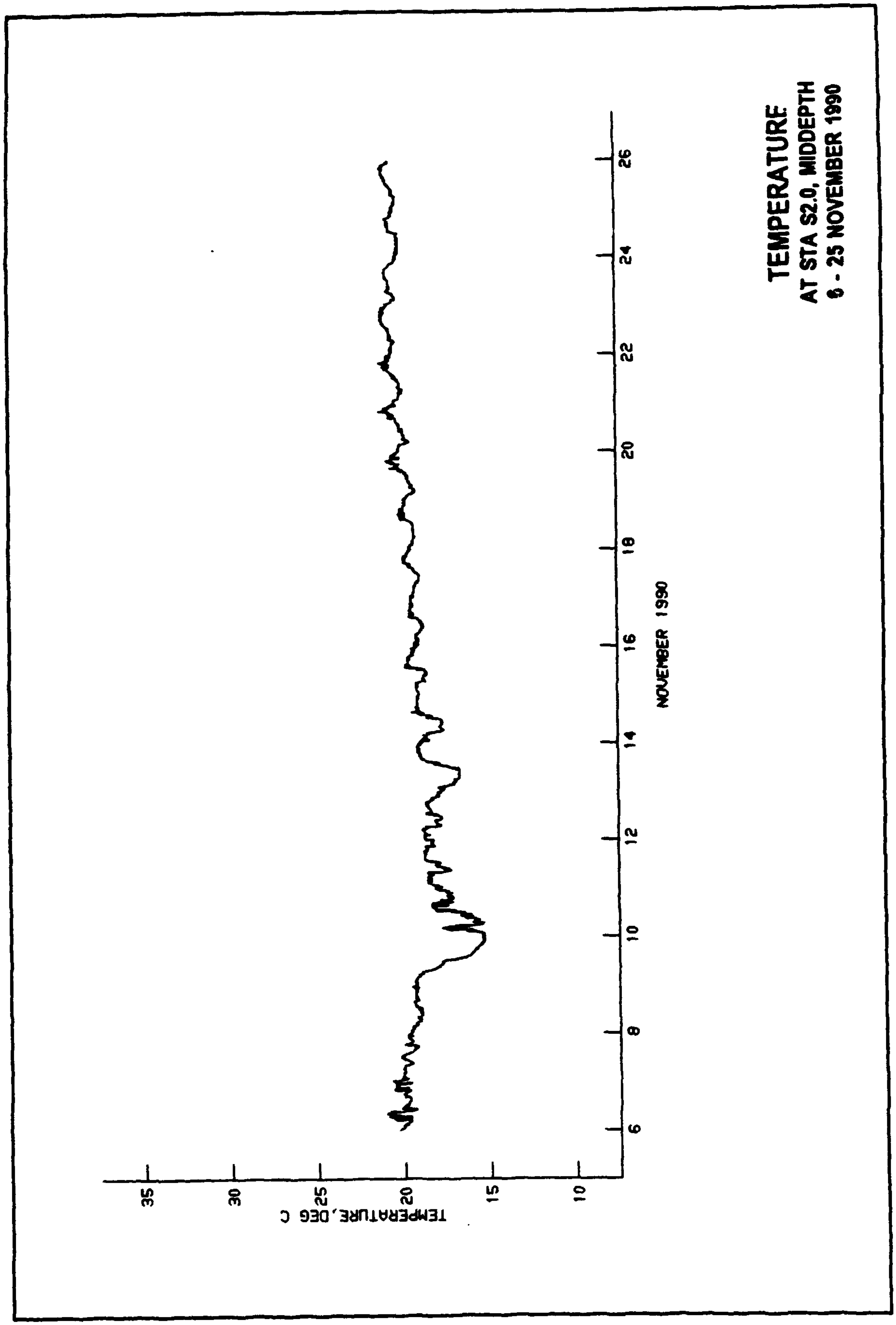
Plate 244



TEMPERATURE
AT STA S12.0, THREE-QUARTER DEPTH
17 OCTOBER - 5 NOVEMBER 1990


TEMPERATURE
AT STA S2.0, MIDDEPTH
6 - 25 NOVEMBER 1990
TEMPERATURE, DEG C
35
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25
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NOVEMBER 1990
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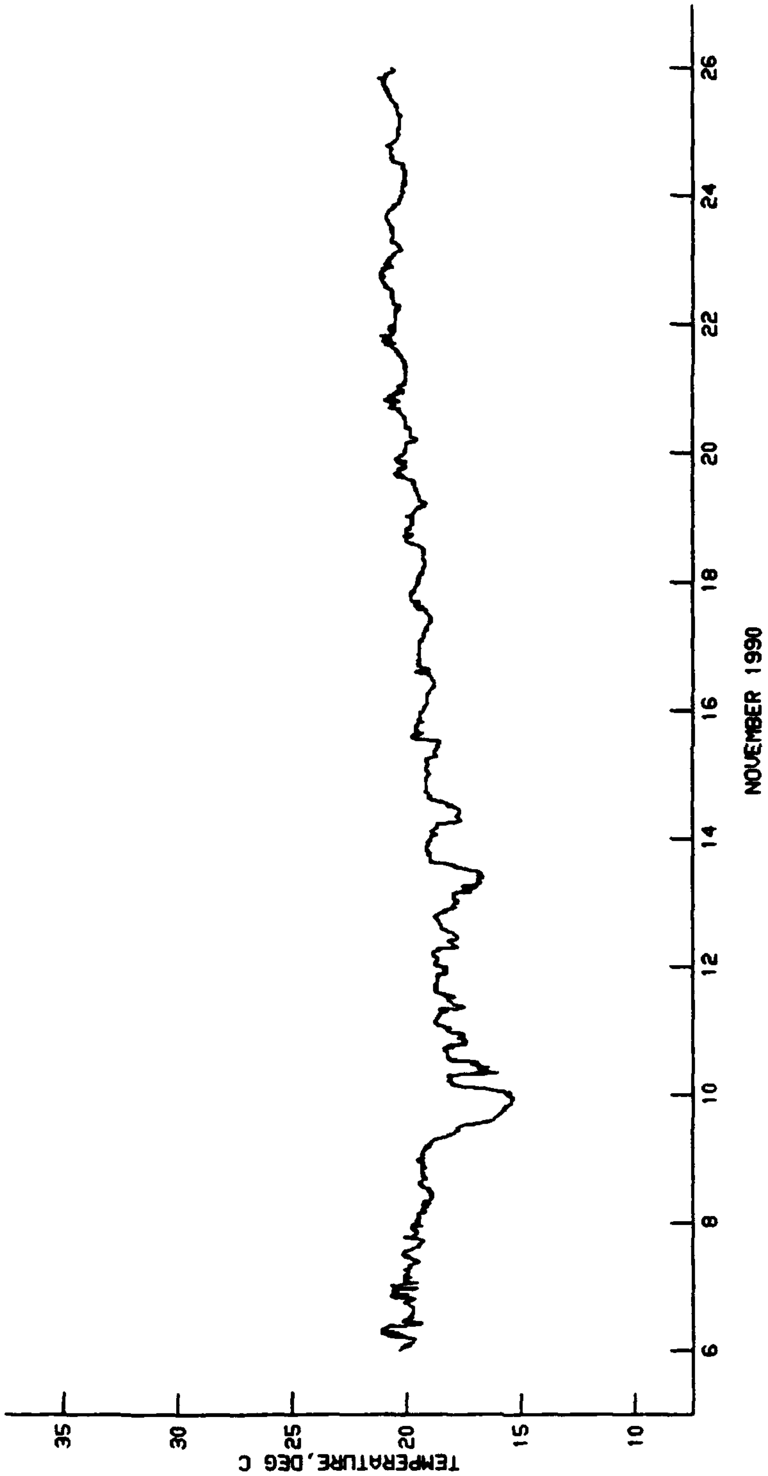
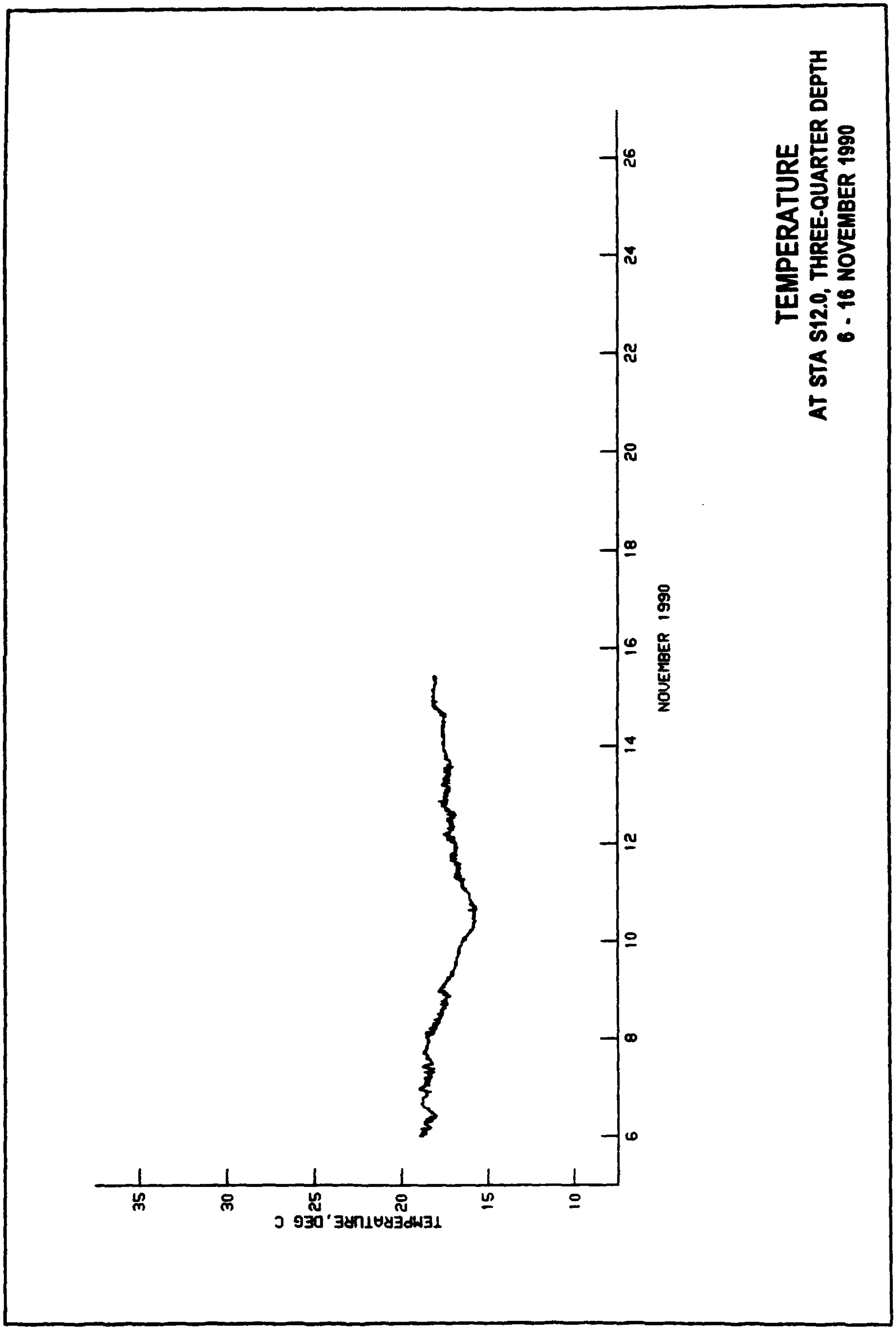
Plate 246



TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
6 - 25 NOVEMBER 1990



TEMPERATURE
AT STA S12.0, THREE-QUARTER DEPTH
6 - 16 NOVEMBER 1990
TEMPERATURE, DEG C
10
15
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35
NOVEMBER 1990
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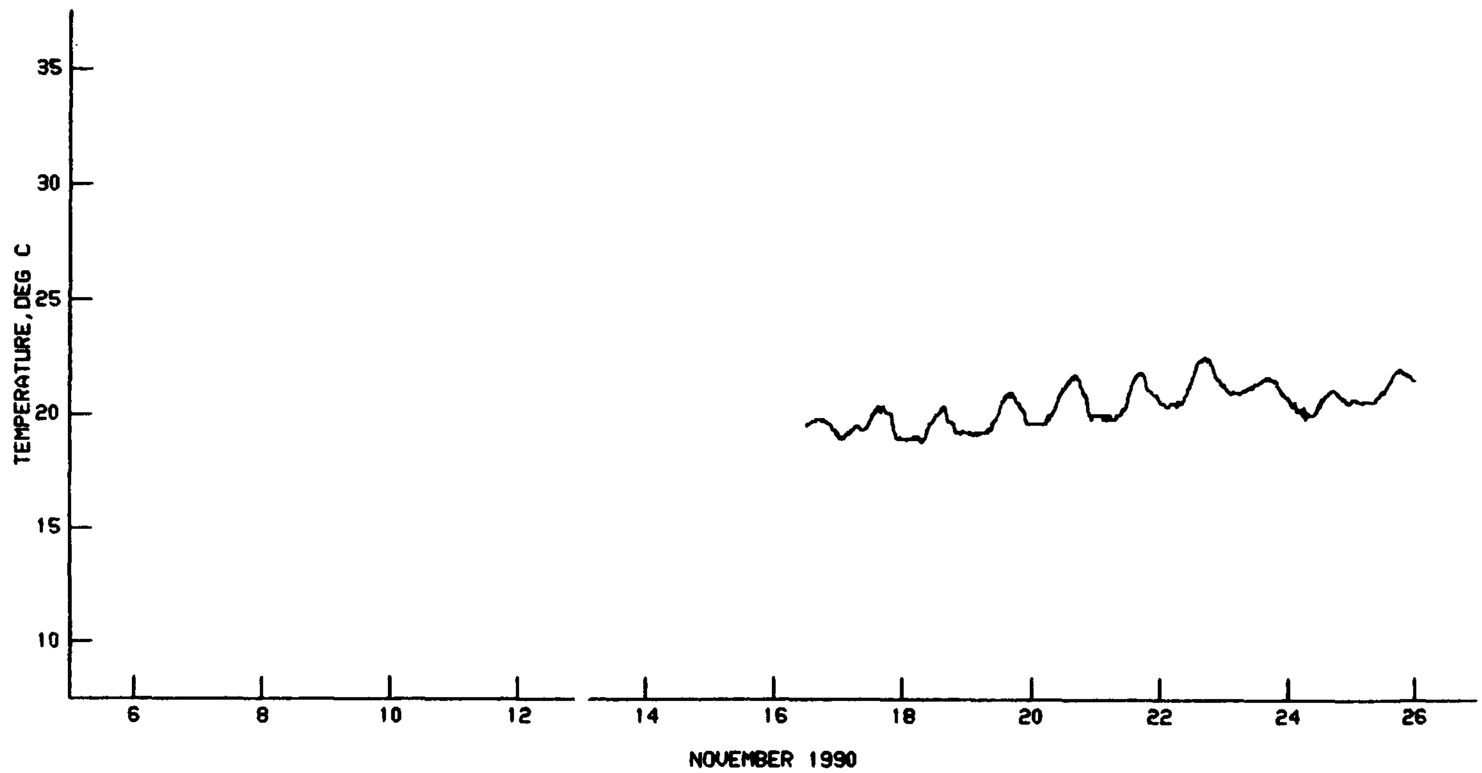
Plate 248



TEMPERATURE
AT STA S5.5, THREE-QUARTER DEPTH
16 - 25 NOVEMBER 1990

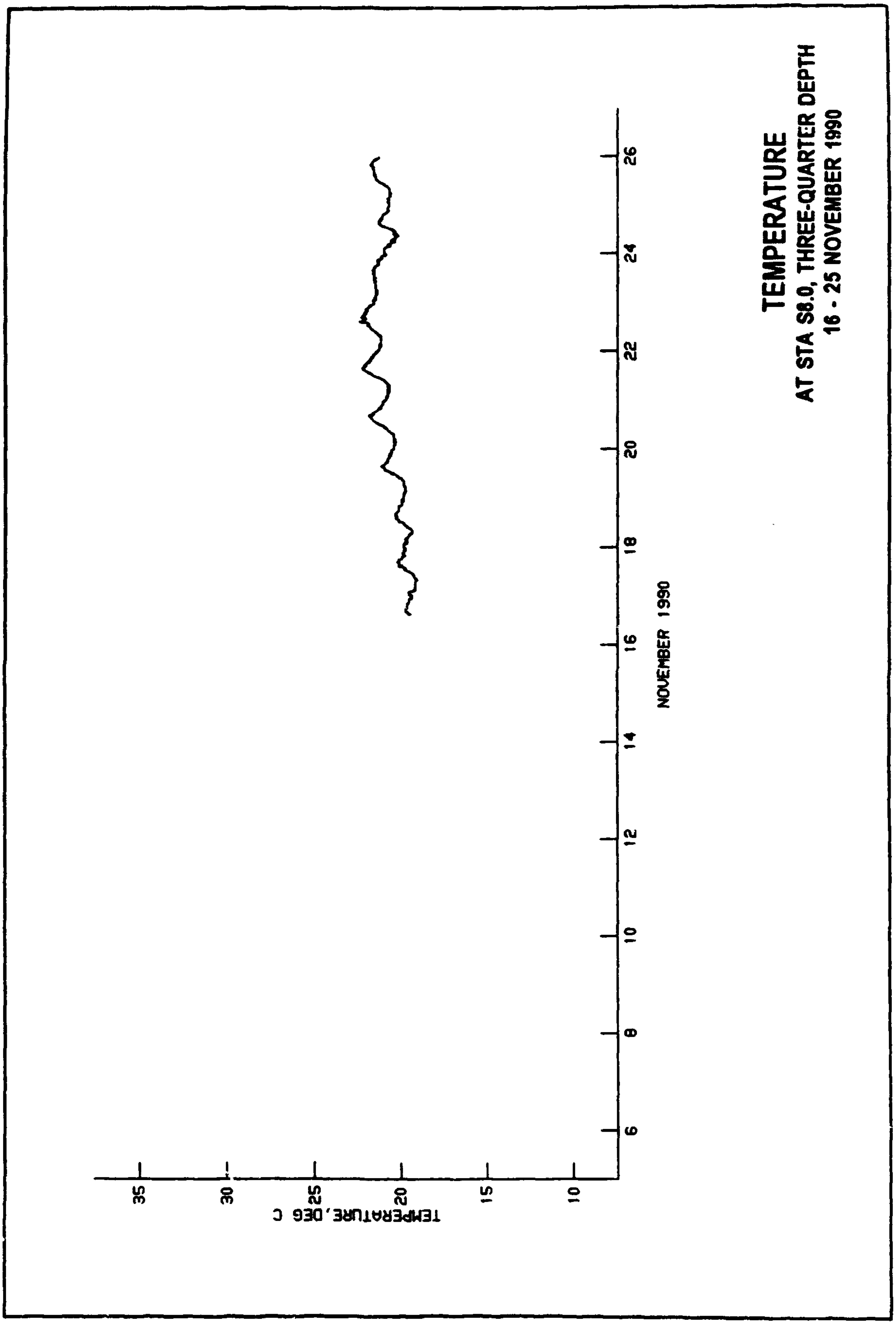

TEMPERATURE
AT STA S8.0, THREE-QUARTER DEPTH
16 - 25 NOVEMBER 1990
NOVEMBER 1990
TEMPERATURE, DEG C
6
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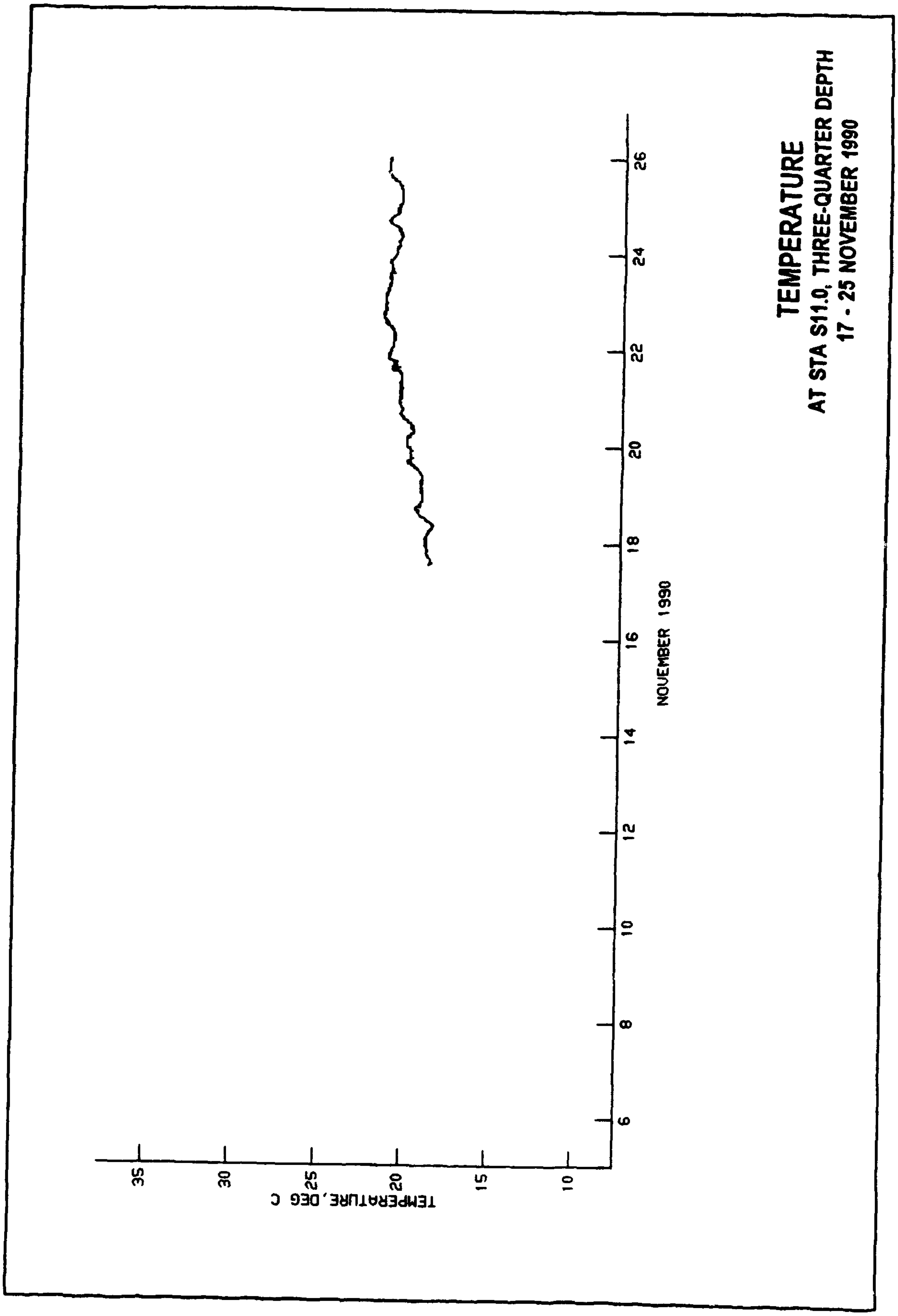
Plate 250


TEMPERATURE
AT STA S11.0, THREE-QUARTER DEPTH
17 - 25 NOVEMBER 1990
NOVEMBER 1990
6
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18
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26
TEMPERATURE, DEG C
10
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25
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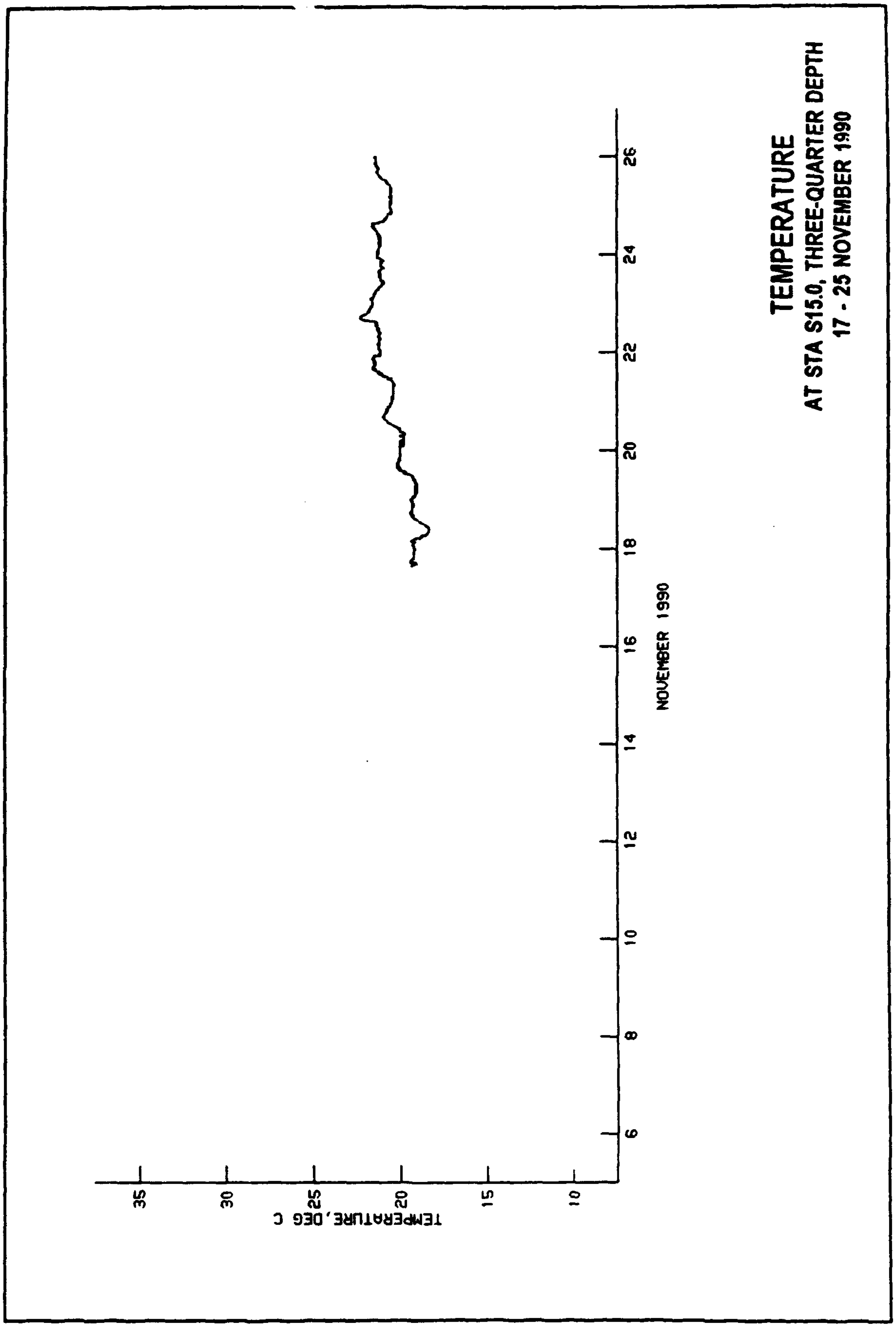
TEMPERATURE
AT STA S15.0, THREE-QUARTER DEPTH
17 - 25 NOVEMBER 1990
TEMPERATURE, DEG C
NOVEMBER 1990
10
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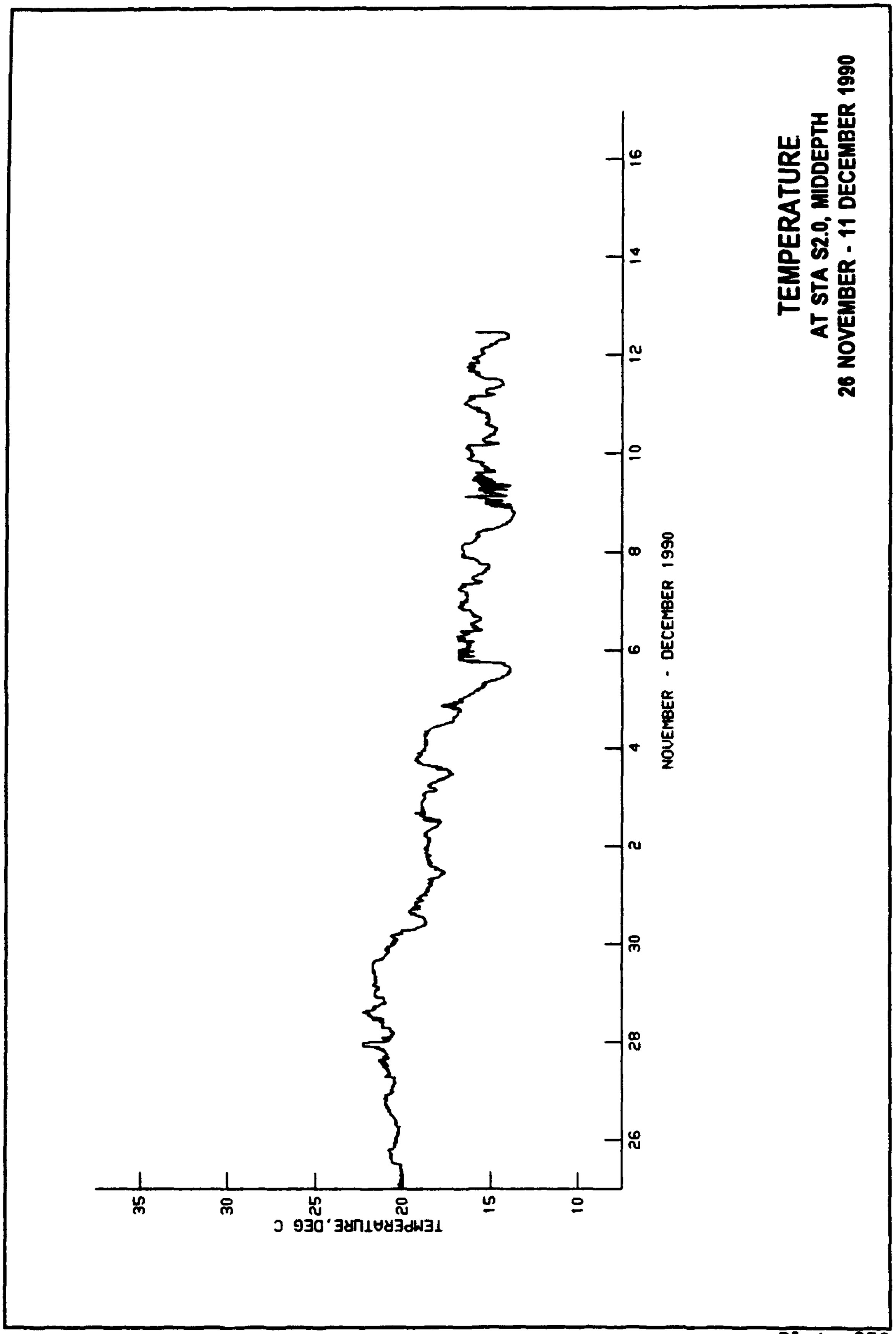
Plate 252


TEMPERATURE
AT STA S2.0, MIDDEPTH
26 NOVEMBER - 11 DECEMBER 1990
TEMPERATURE, DEG C
35
30
25
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NOVEMBER - DECEMBER 1990
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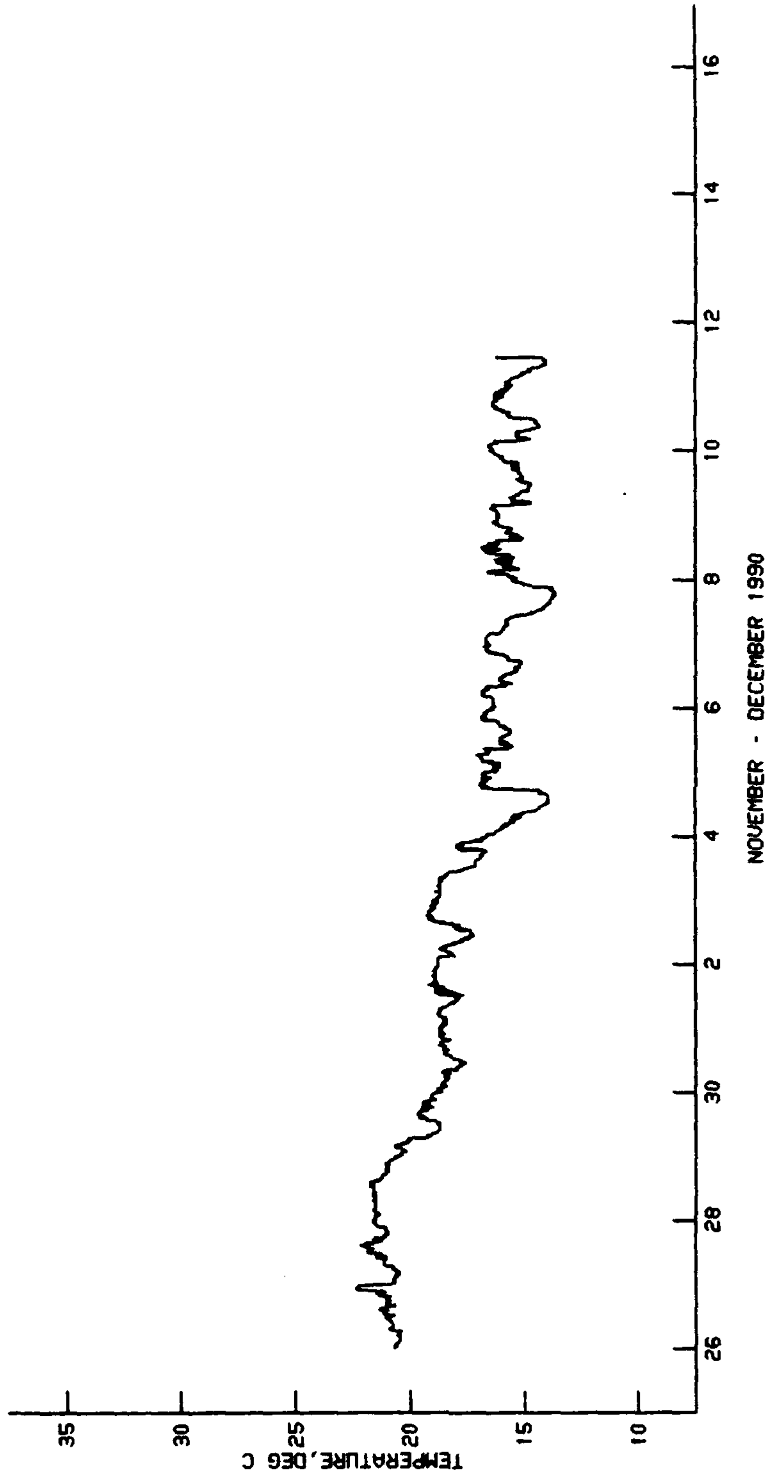
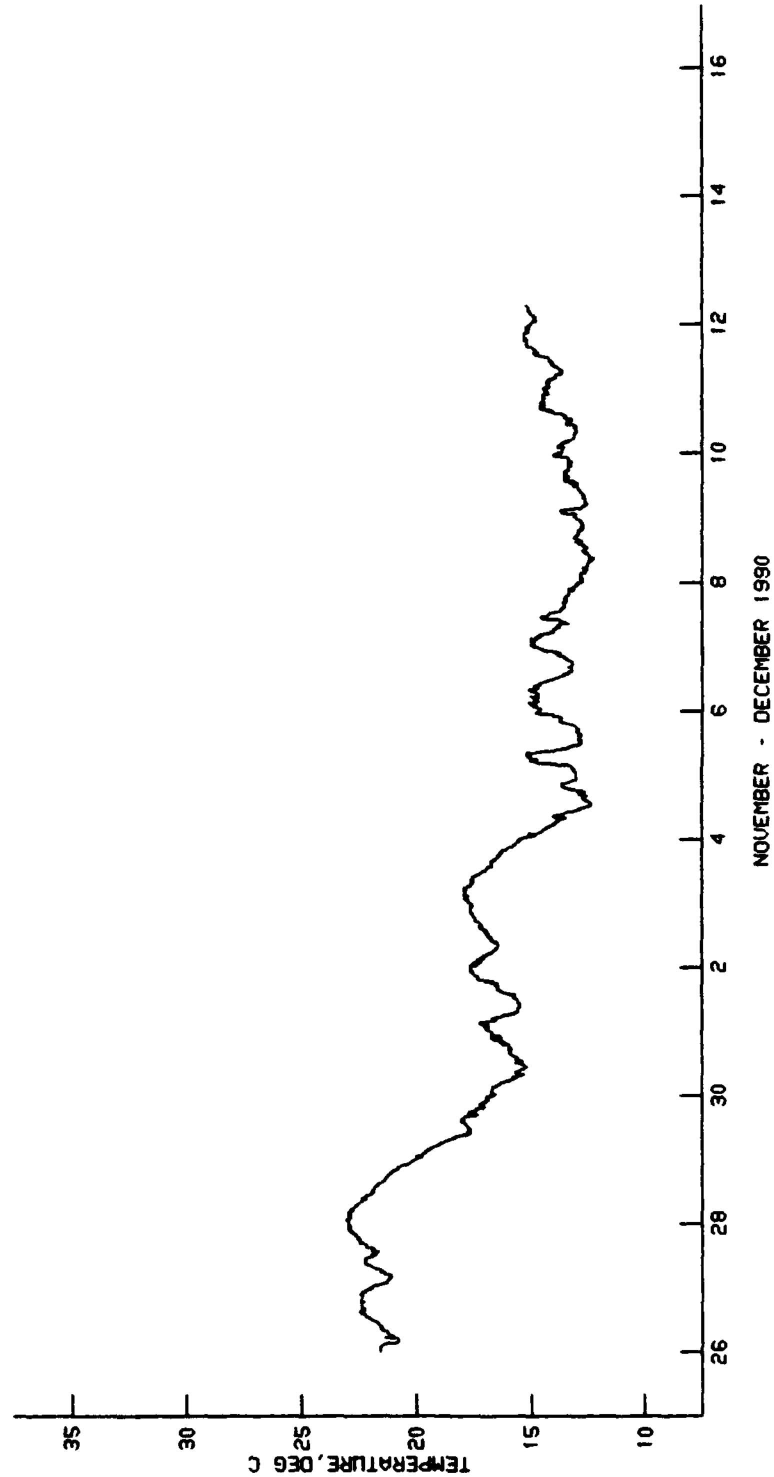
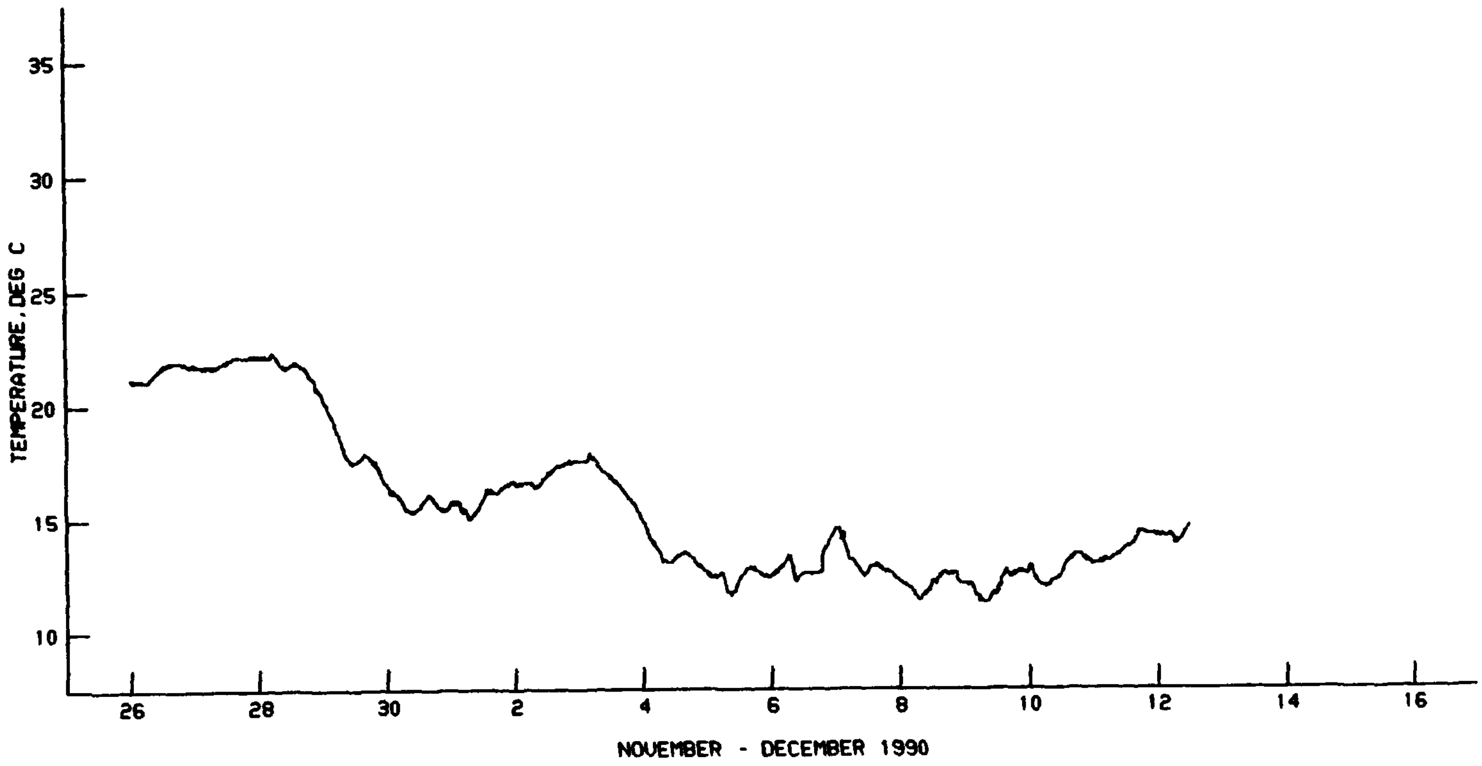


TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
26 NOVEMBER - 11 DECEMBER 1990

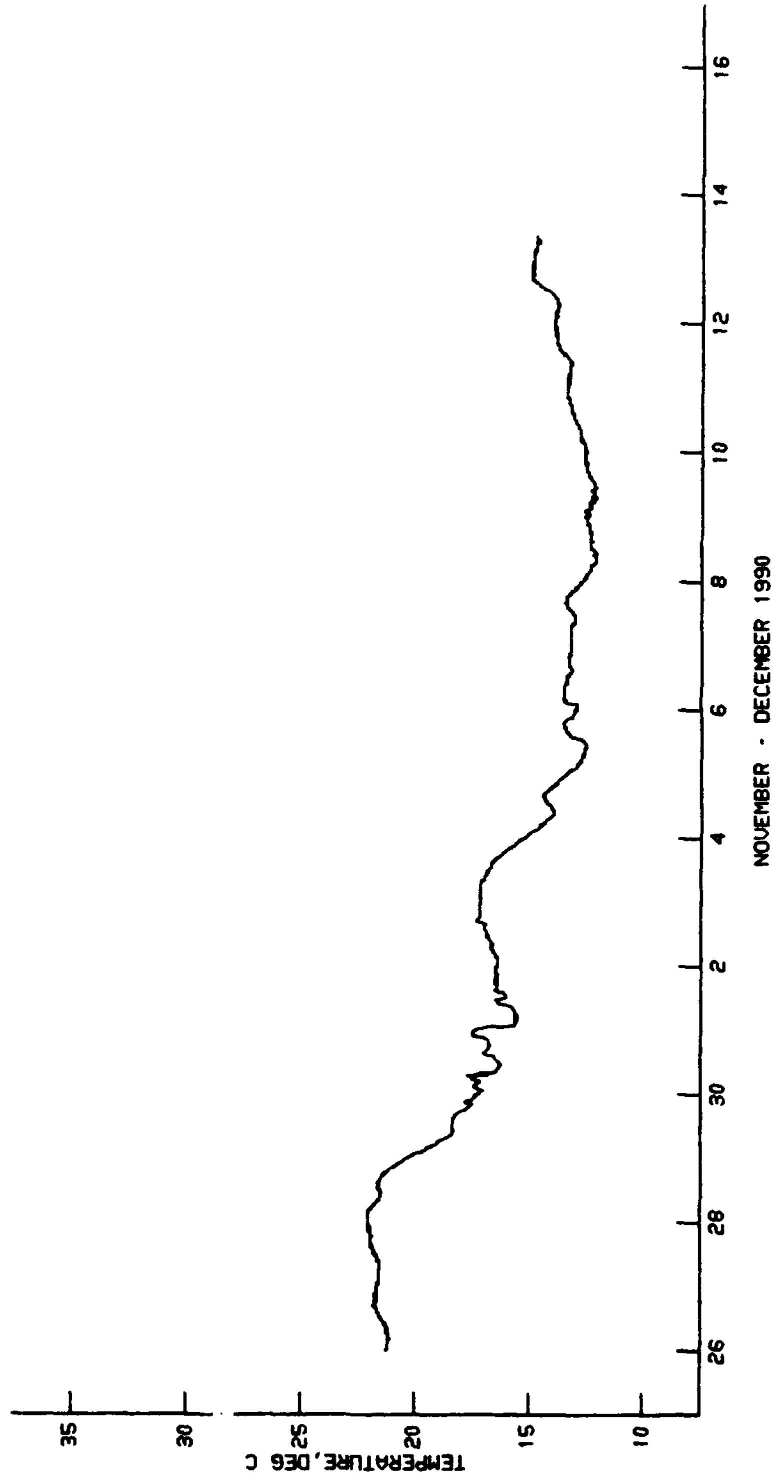
Plate 254



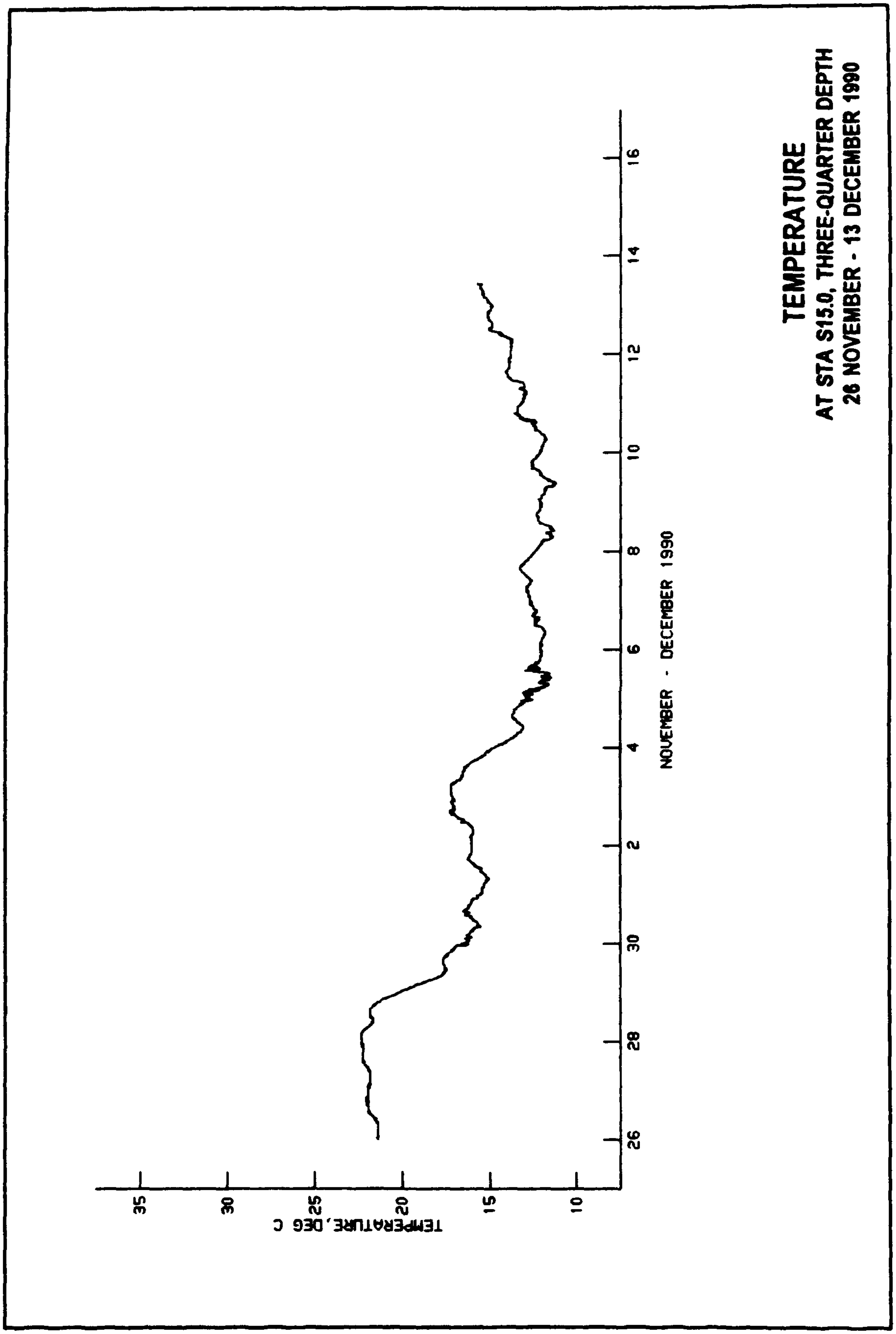
TEMPERATURE
AT STA S5.5, THREE-QUARTER DEPTH
26 NOVEMBER - 12 DECEMBER 1990



TEMPERATURE
AT STA S8.0, THREE-QUARTER DEPTH
26 NOVEMBER - 12 DECEMBER 1990



TEMPERATURE
AT STA S11.0, THREE-QUARTER DEPTH
26 NOVEMBER - 13 DECEMBER 1990


TEMPERATURE
AT STA S15.0, THREE-QUARTER DEPTH
26 NOVEMBER - 13 DECEMBER 1990
TEMPERATURE, DEG C
10
15
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NOVEMBER - DECEMBER 1990
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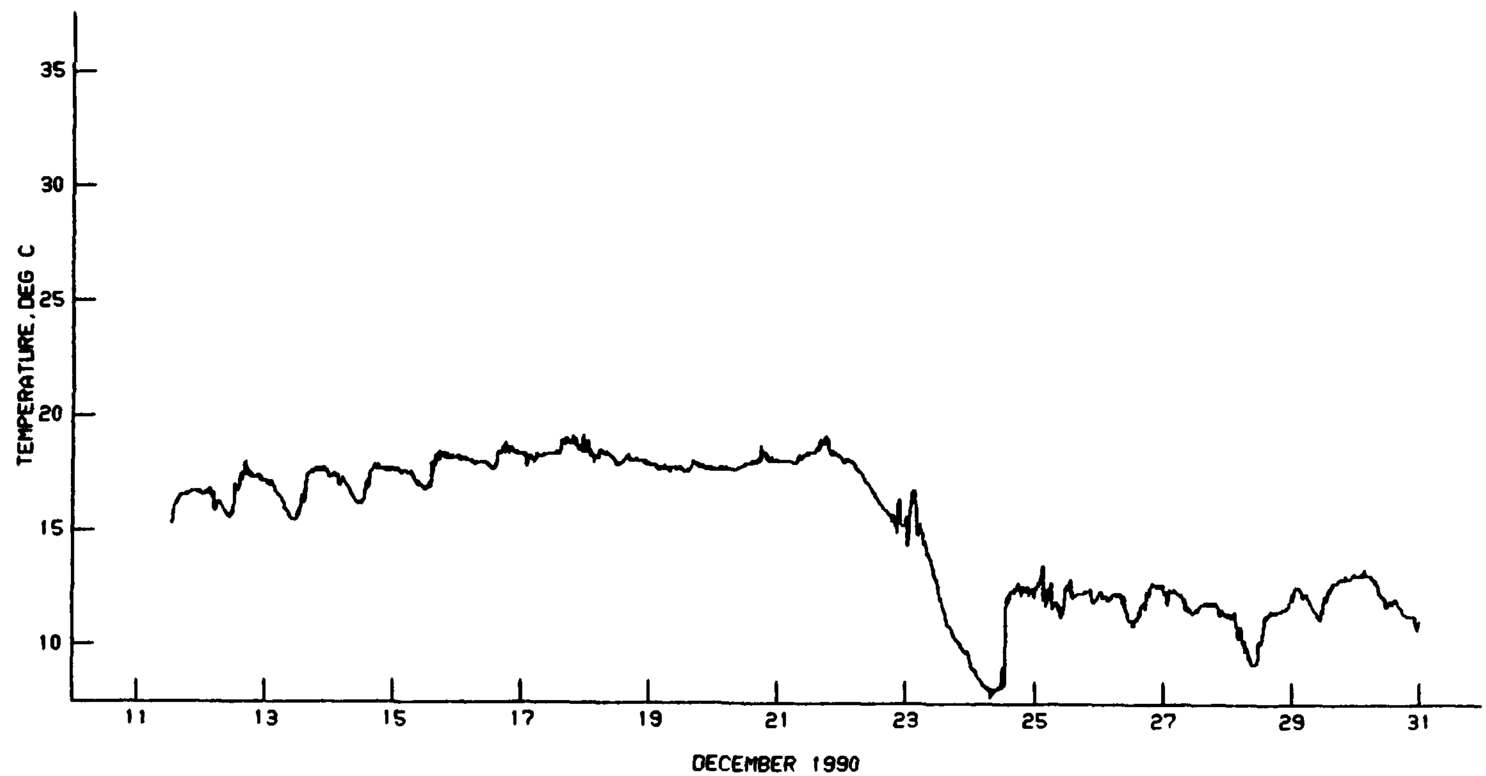
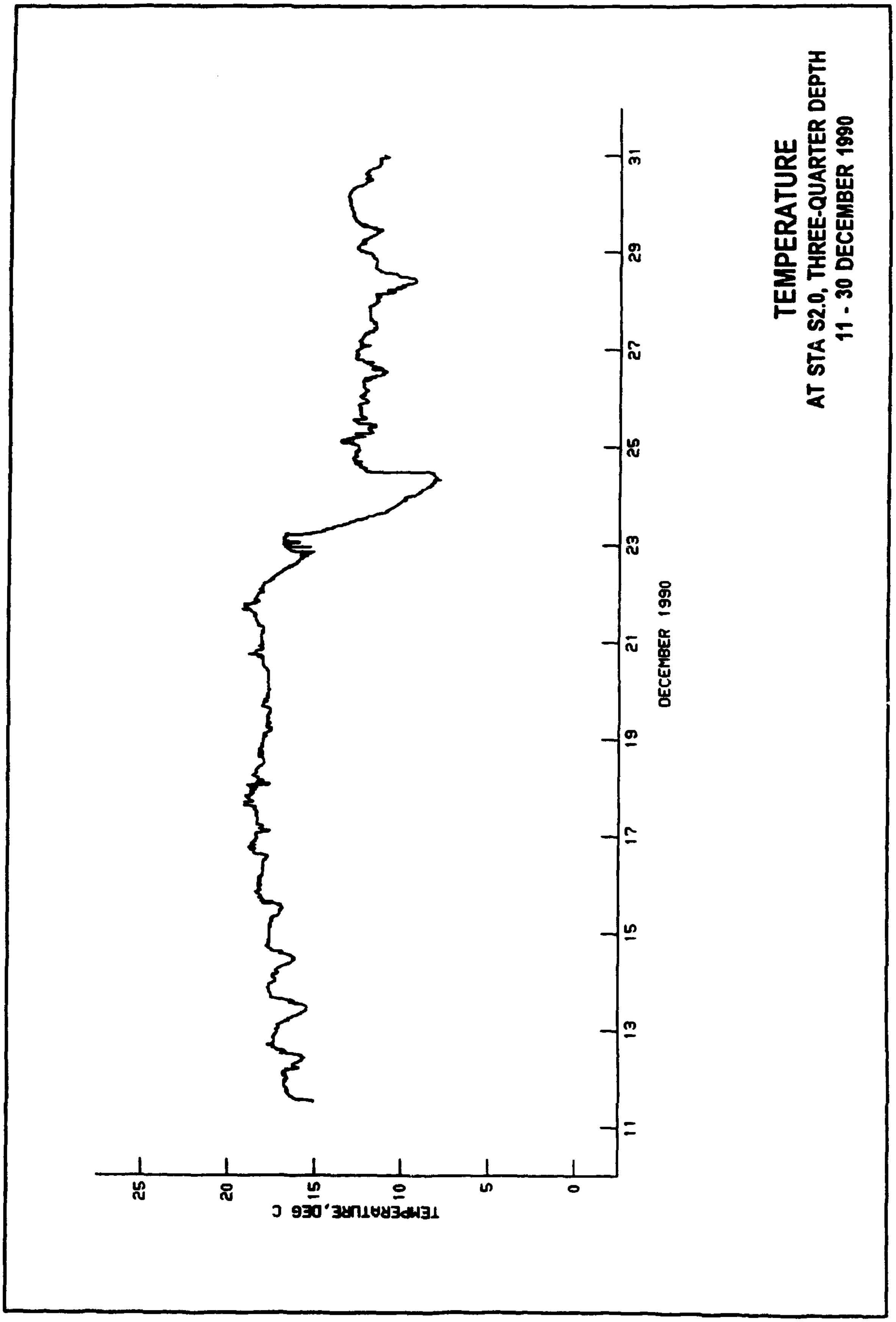
Plate 258



TEMPERATURE
AT STA S2.0, MIDDEPTH
11 - 30 DECEMBER 1990


TEMPERATURE
AT STA S2.0, THREE-QUARTER DEPTH
11 - 30 DECEMBER 1990
TEMPERATURE, DEG C
0
5
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15
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25
DECEMBER 1990
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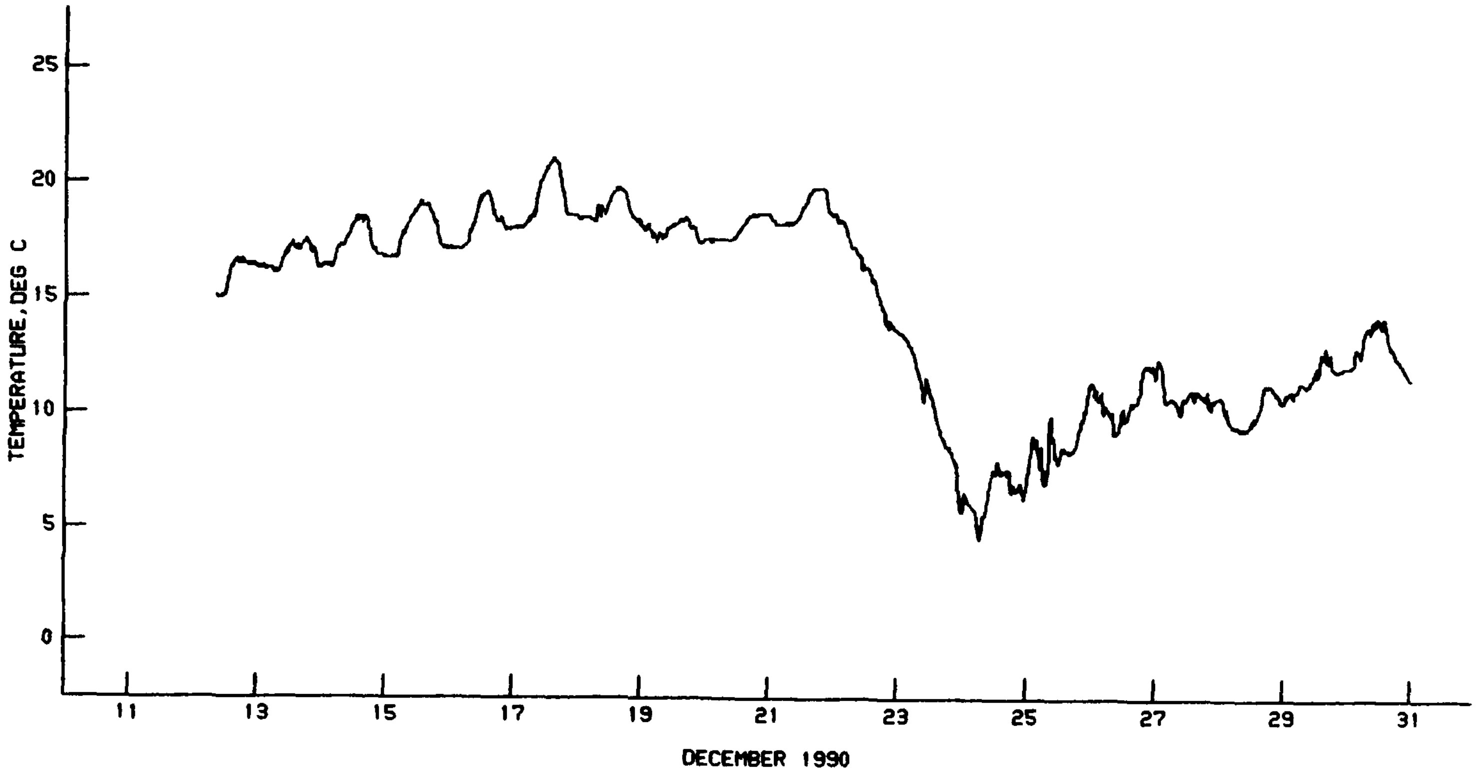
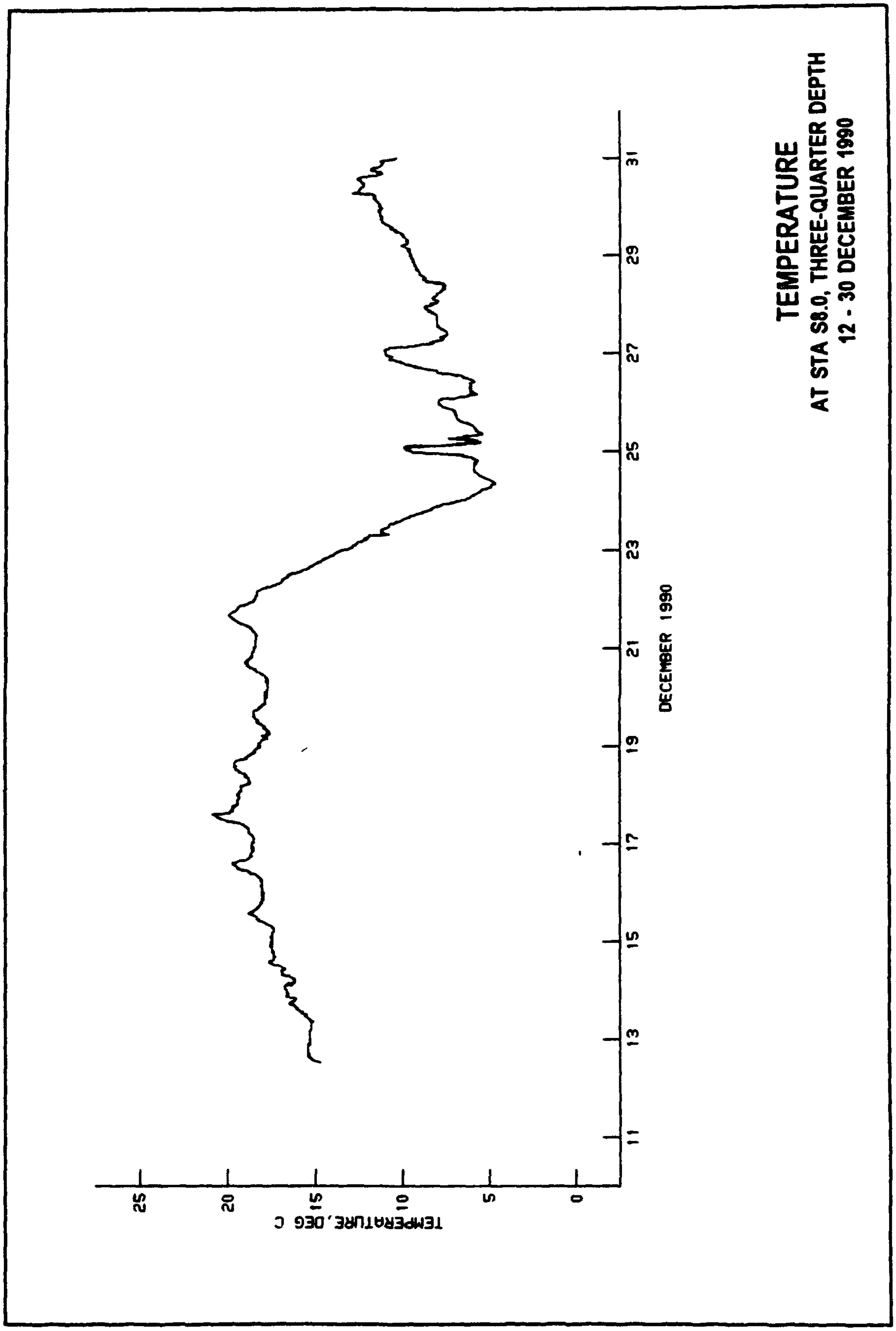
Plate 260



TEMPERATURE
AT STA S5.5, THREE-QUARTER DEPTH
12 - 30 DECEMBER 1990


TEMPERATURE
AT STA S8.0, THREE-QUARTER DEPTH
12 - 30 DECEMBER 1990
TEMPERATURE, DEG C
0
5
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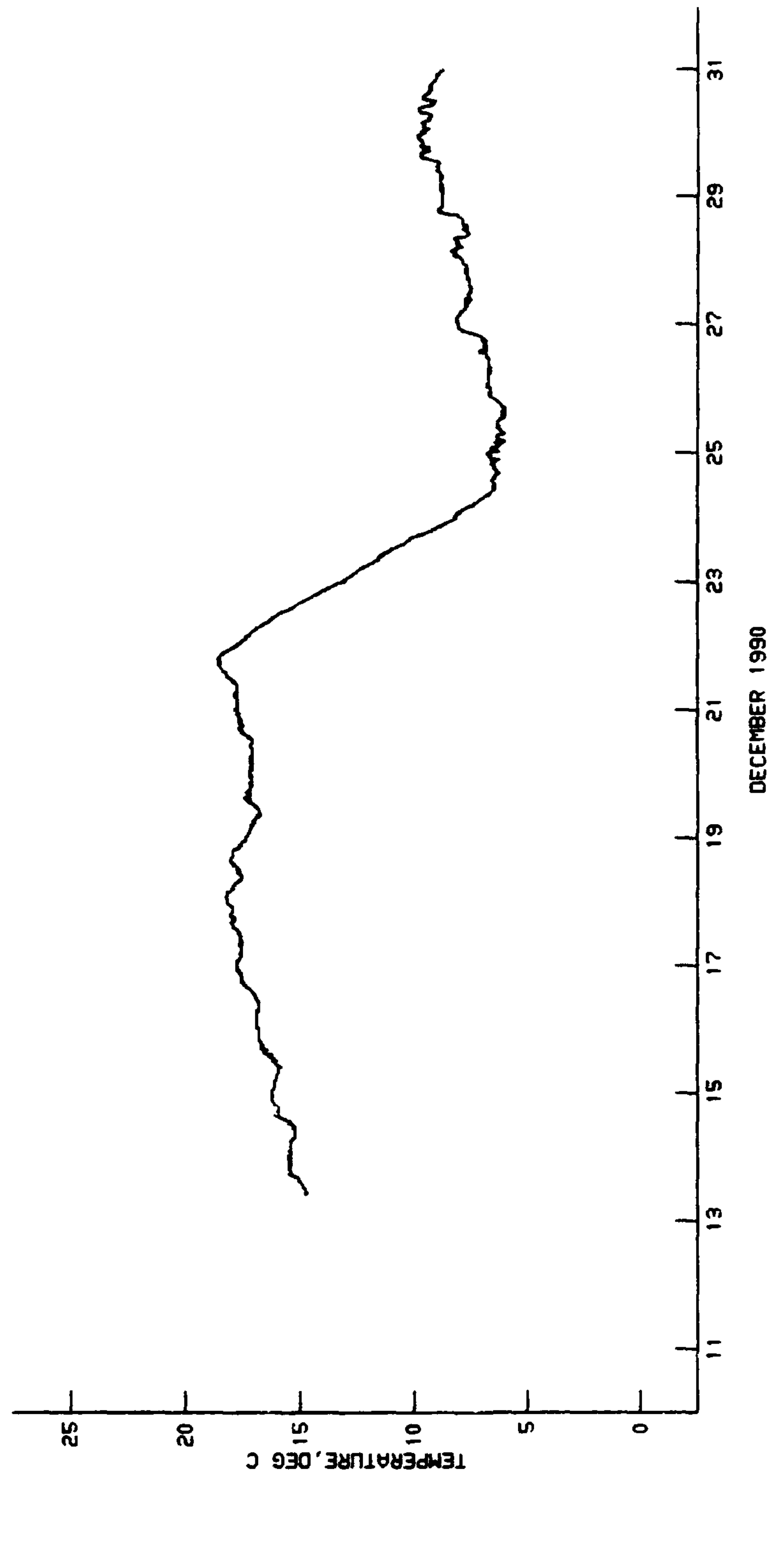
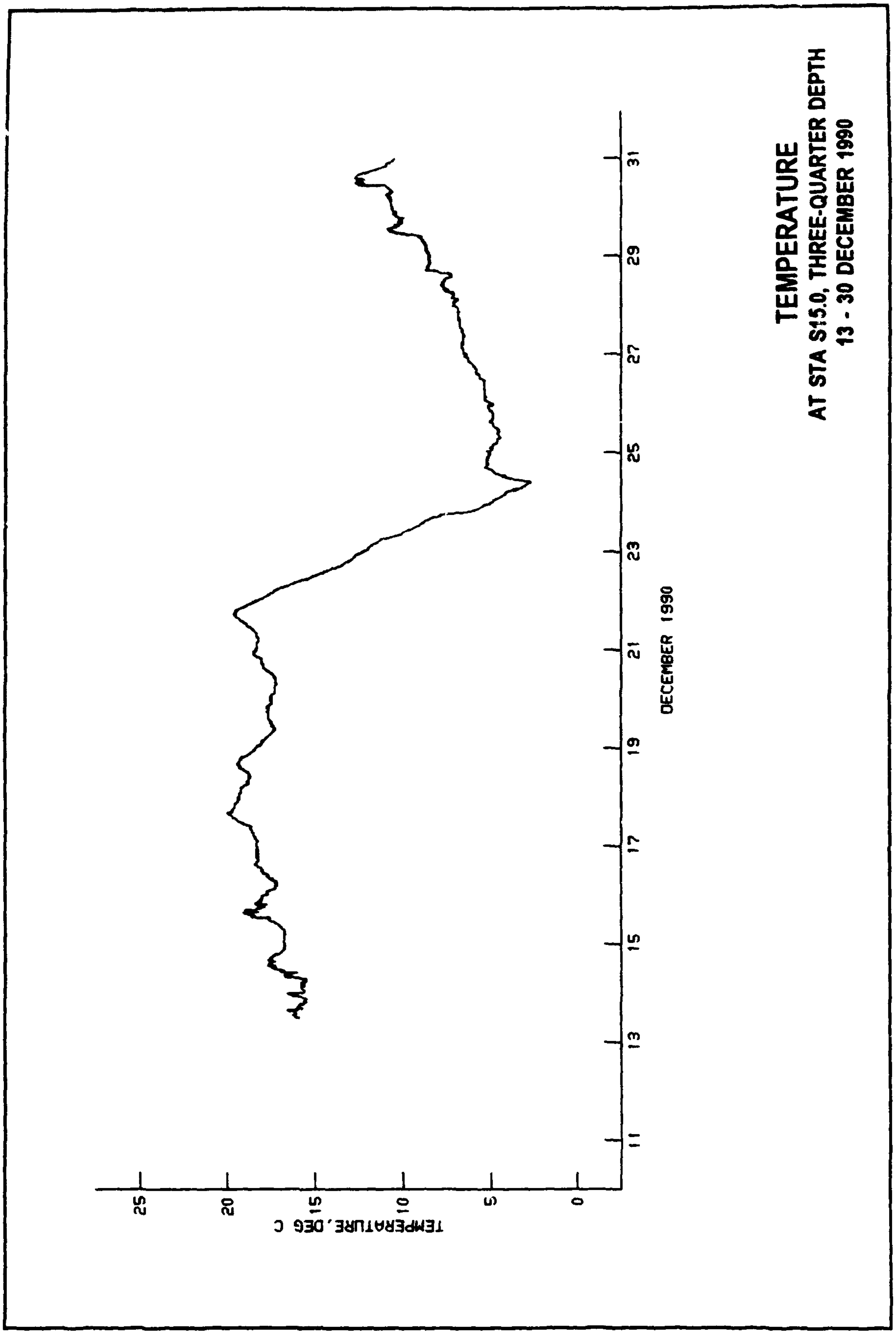
31
DECEMBER 1990

Plate 262



TEMPERATURE
AT STA S11.0, THREE-QUARTER DEPTH
13 - 30 DECEMBER 1990


TEMPERATURE
AT STA S15.0, THREE-QUARTER DEPTH
13 - 30 DECEMBER 1990
TEMPERATURE, DEG C
0
5
10
15
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25
DECEMBER 1990
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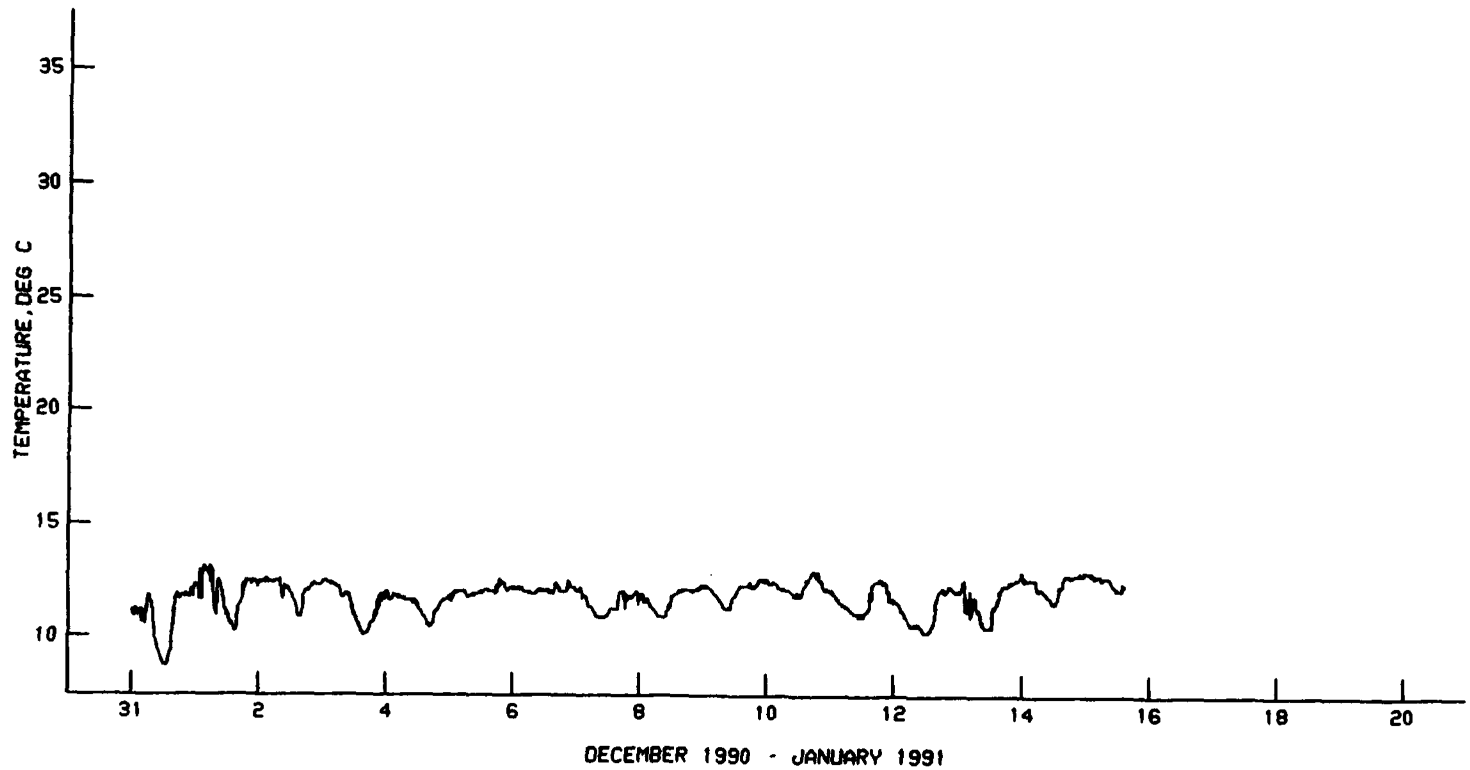
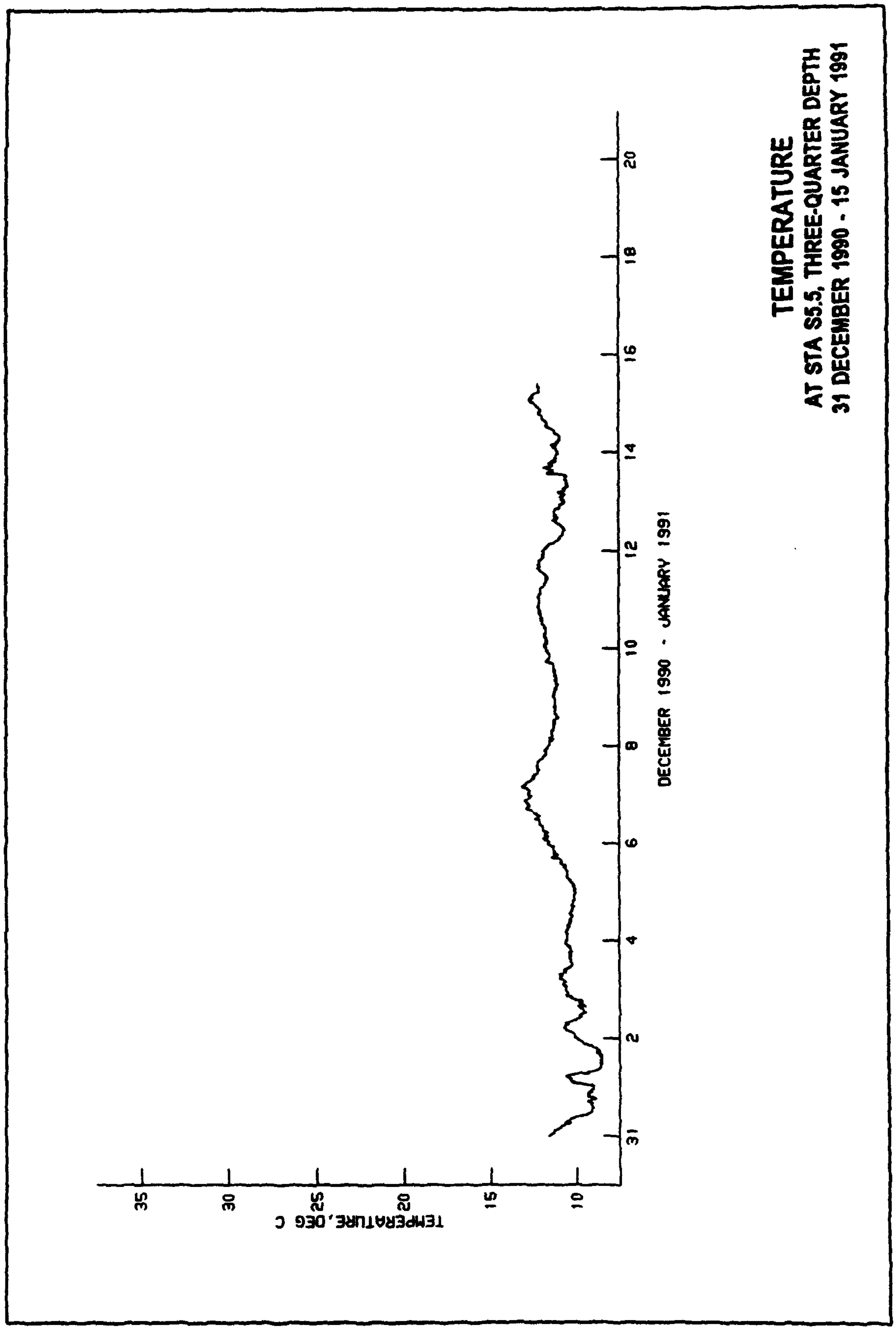
Plate 264



TEMPERATURE
AT STA S2.0, MIDDEPTH
31 DECEMBER 1990 - 15 JANUARY 1991


TEMPERATURE
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TEMPERATURE, DEG C
DECEMBER 1990 - JANUARY 1991
10
15
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31
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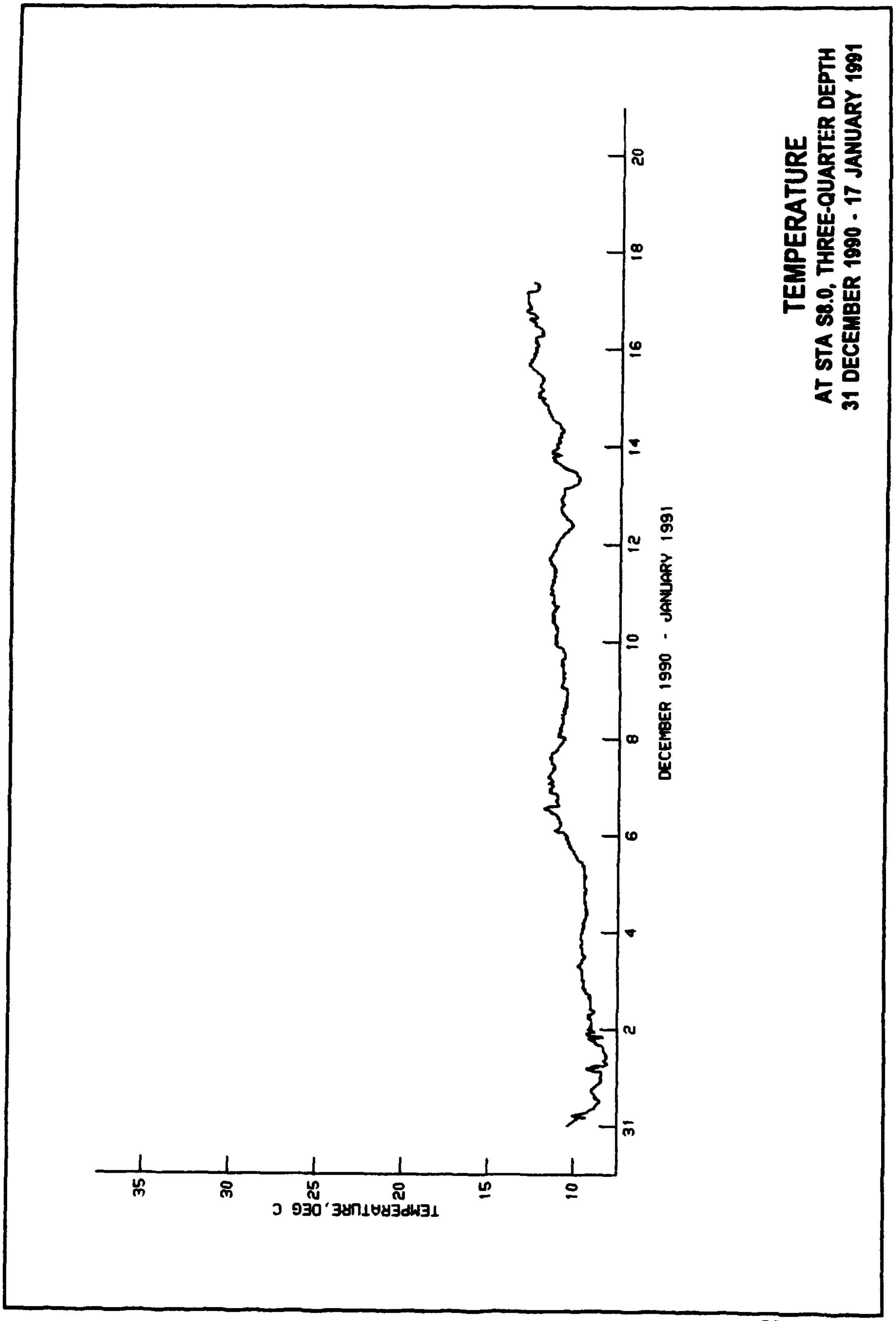
Plate 266


TEMPERATURE
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TEMPERATURE, DEG C
35
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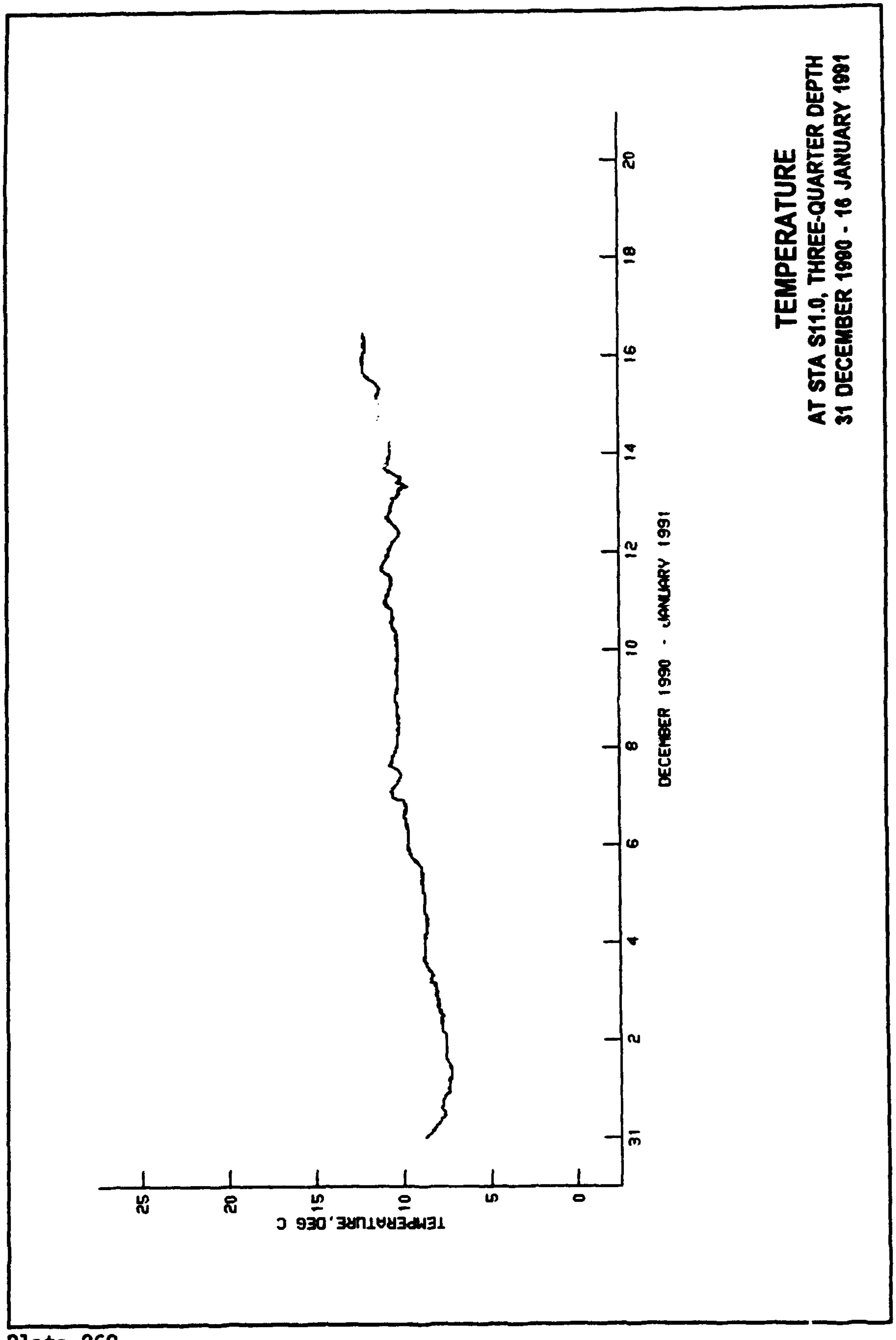
10
12
14
16
18
20
DECEMBER 1990 - JANUARY 1991

Plate 267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TEMPERATURE, DEG C
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12
14
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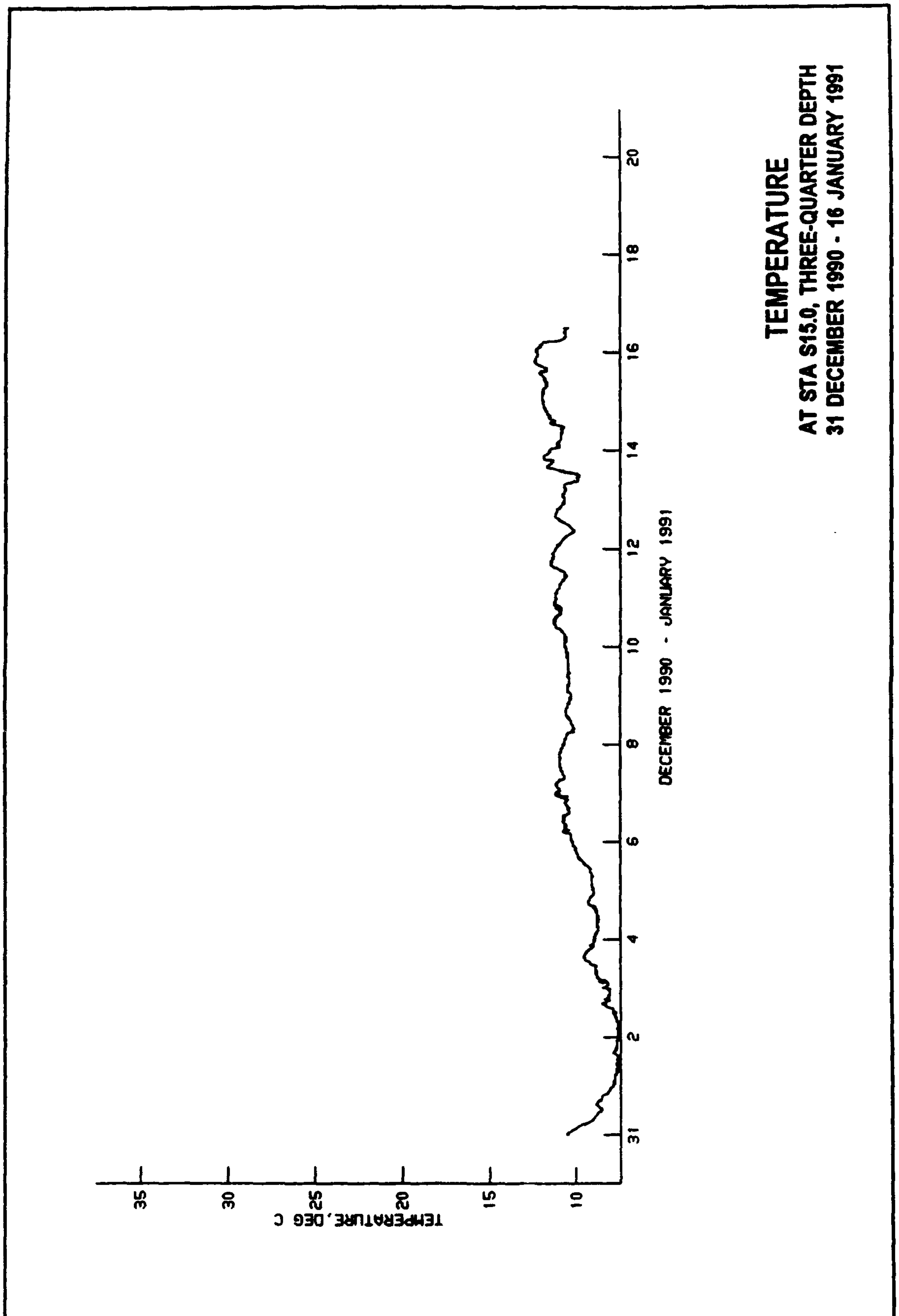
18
20
DECEMBER 1990 - JANUARY 1991

Plate 268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18
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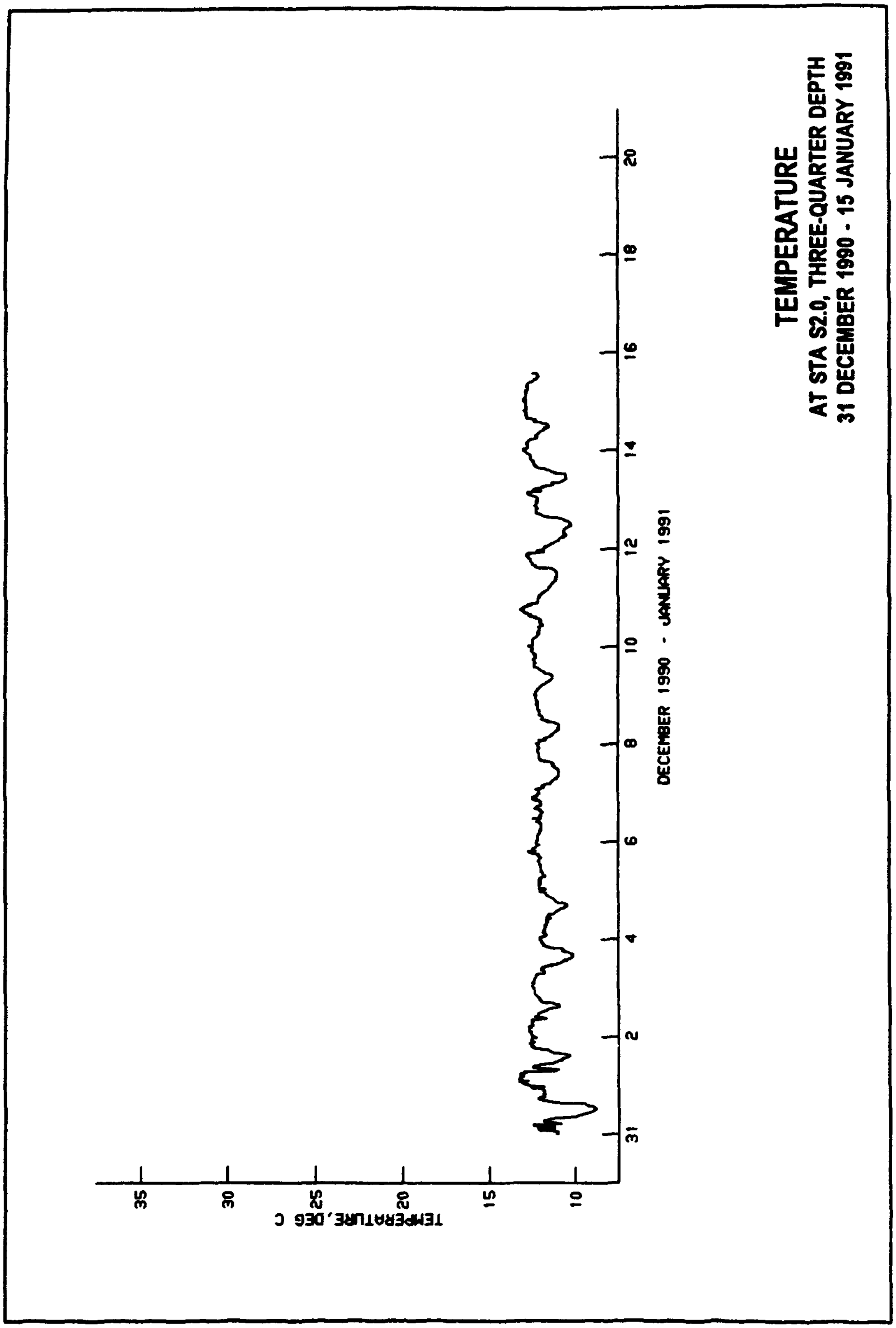
DECEMBER 1990 - JANUARY 1991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TEMPERATURE, DEG C
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DECEMBER 1990 - JANUARY 1991
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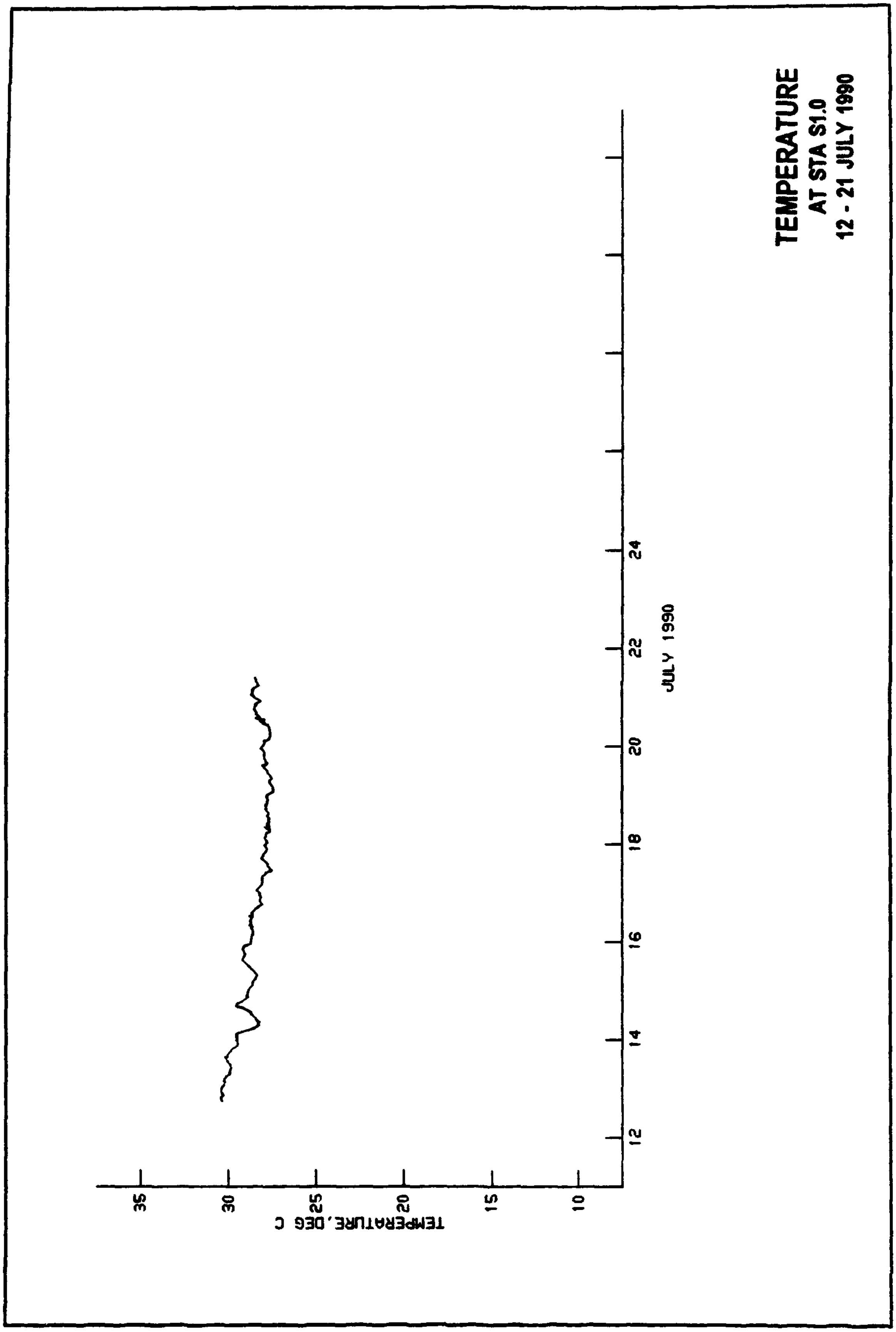
Plate 270



TEMPERATURE
AT STA S1.0
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TEMPERATURE, DEG C
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JULY 1990
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16
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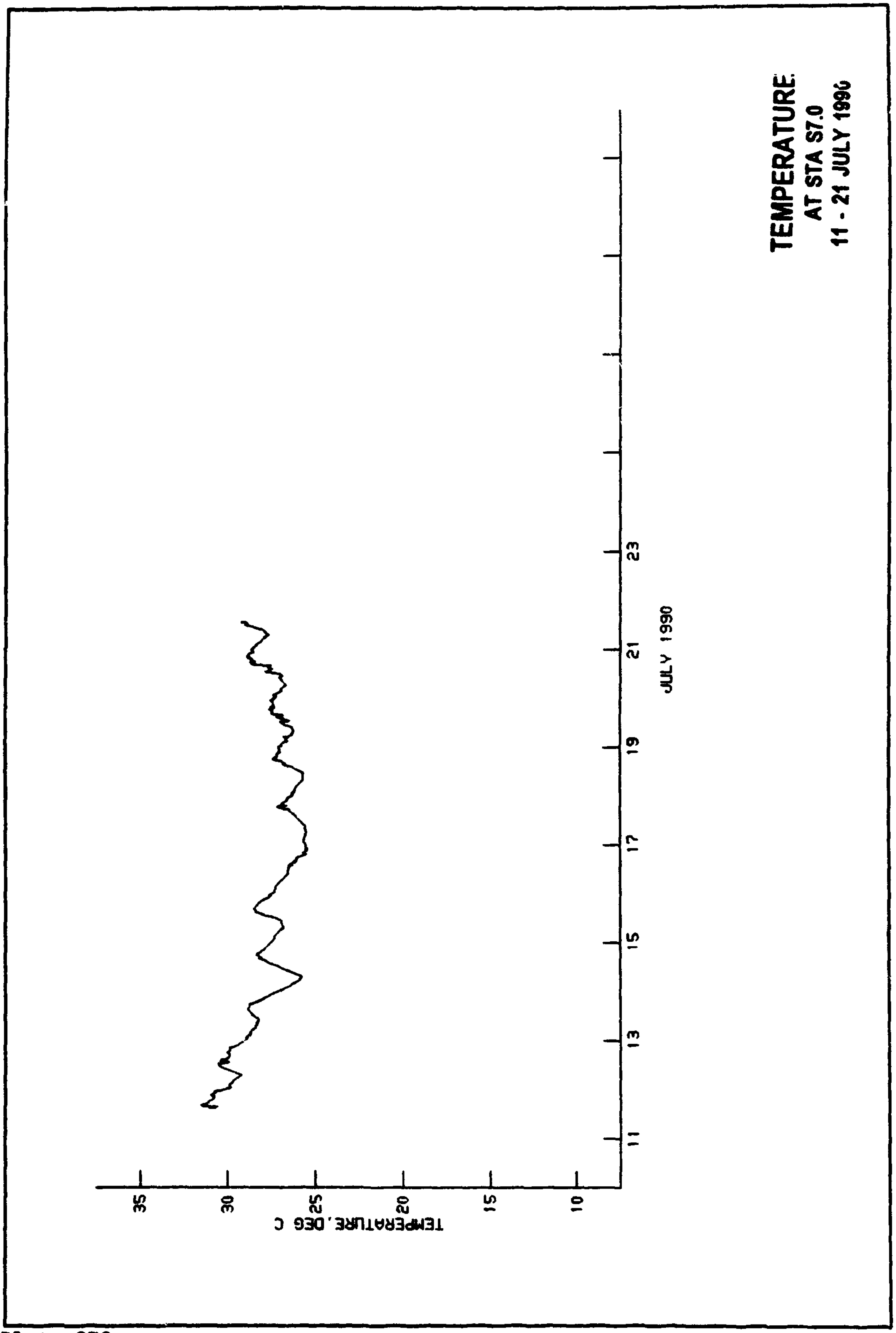
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TEMPERATURE, DEG C
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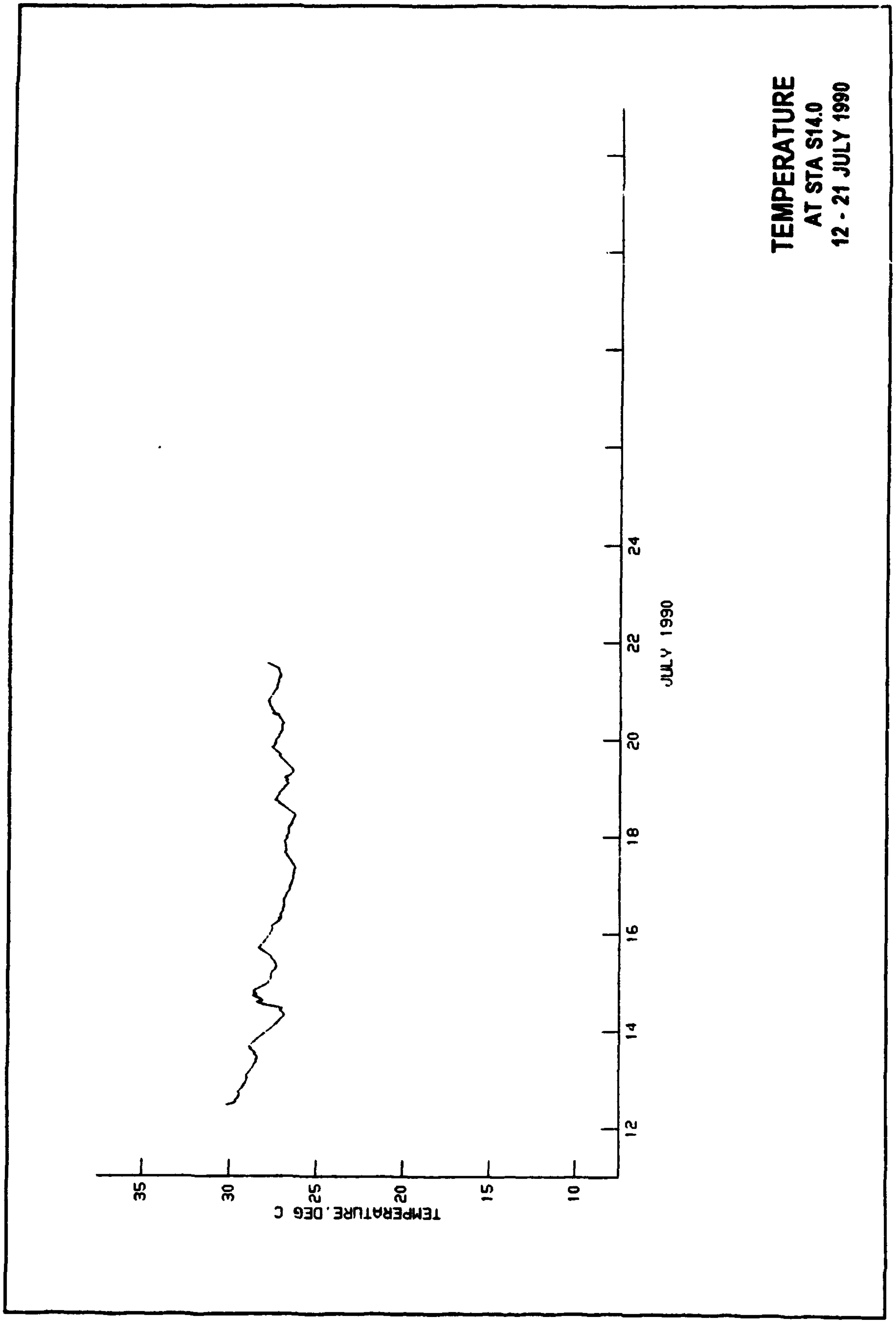
23
JULY 1990

Plate 272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18
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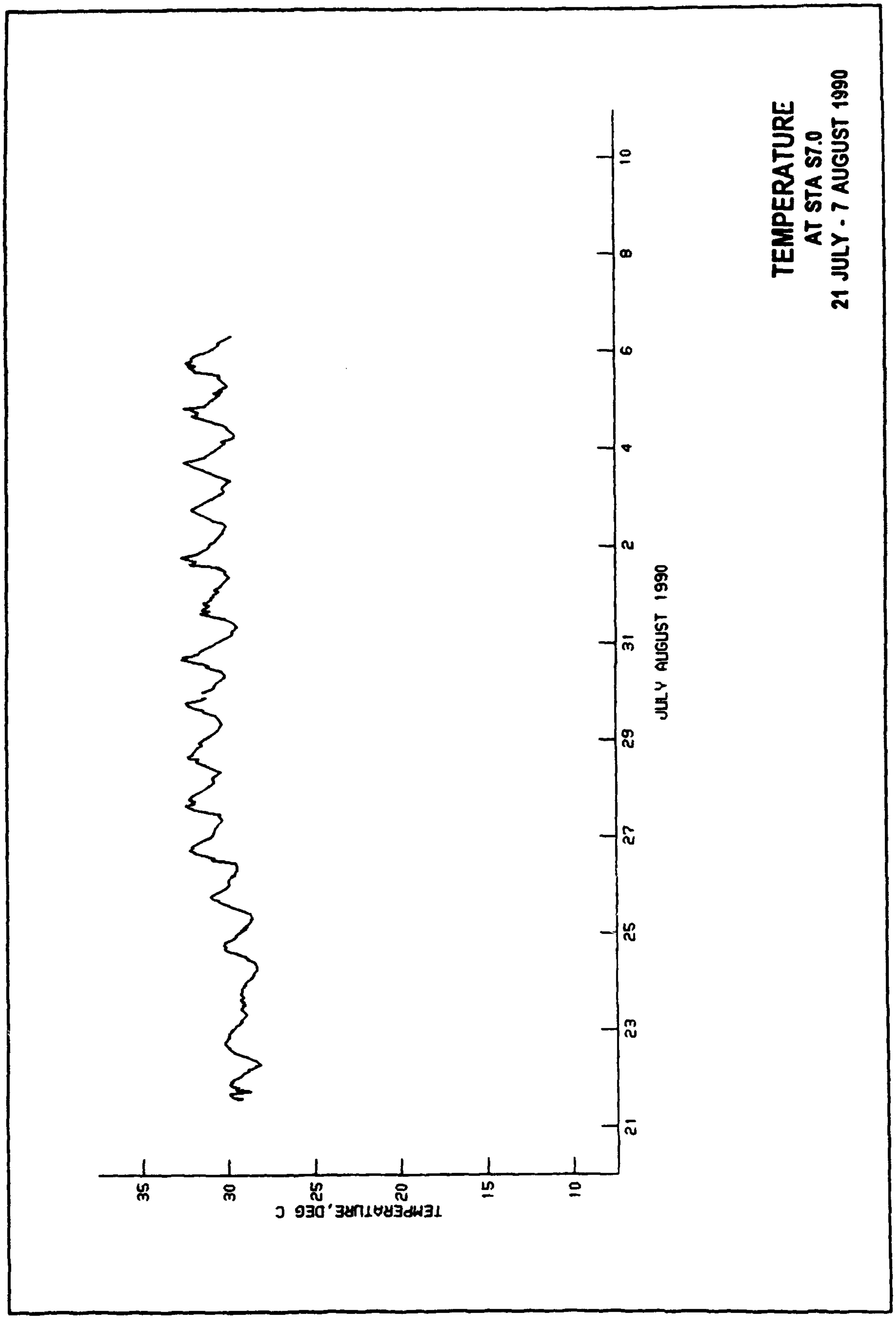
22
24
JULY 1990

Plate 273


TEMPERATURE
AT STA S7.0
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TEMPERATURE, DEG C
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31
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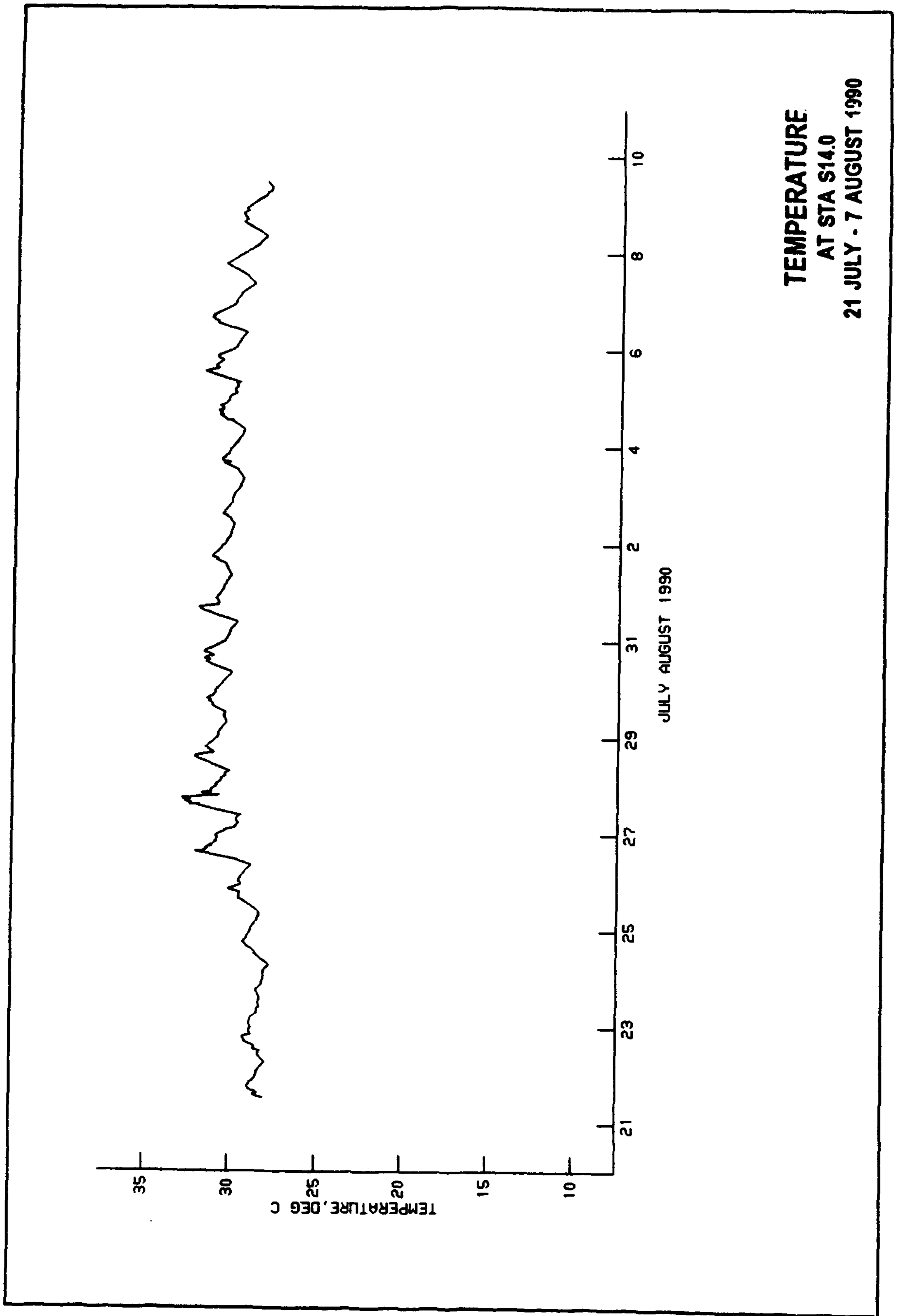
JULY AUGUST 1990

Plate 274


TEMPERATURE
AT STA S14.0
21 JULY - 7 AUGUST 1990
TEMPERATURE, DEG C
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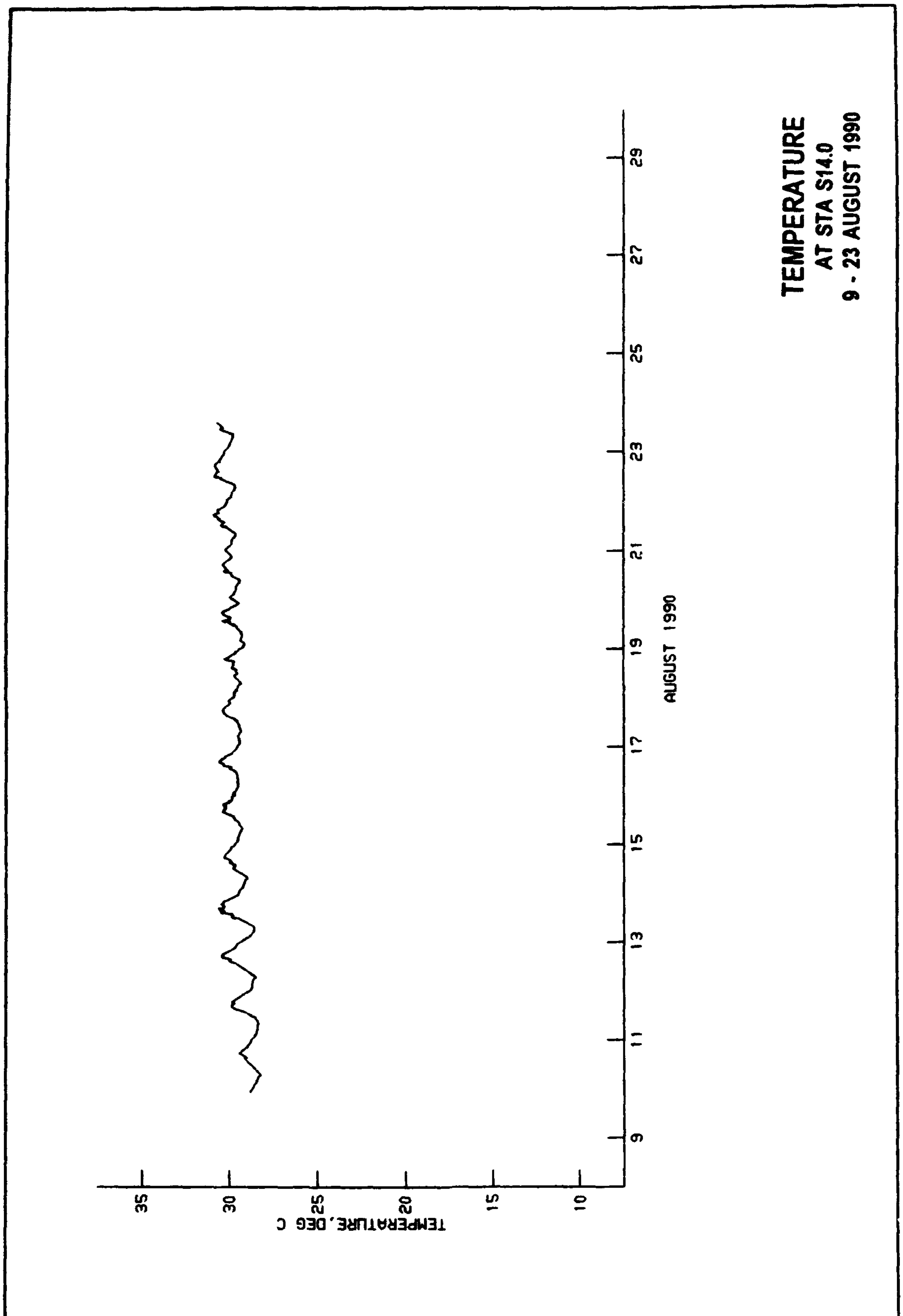
10
JULY AUGUST 1990

Plate 275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TEMPERATURE, DEG C
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AUGUST 1990
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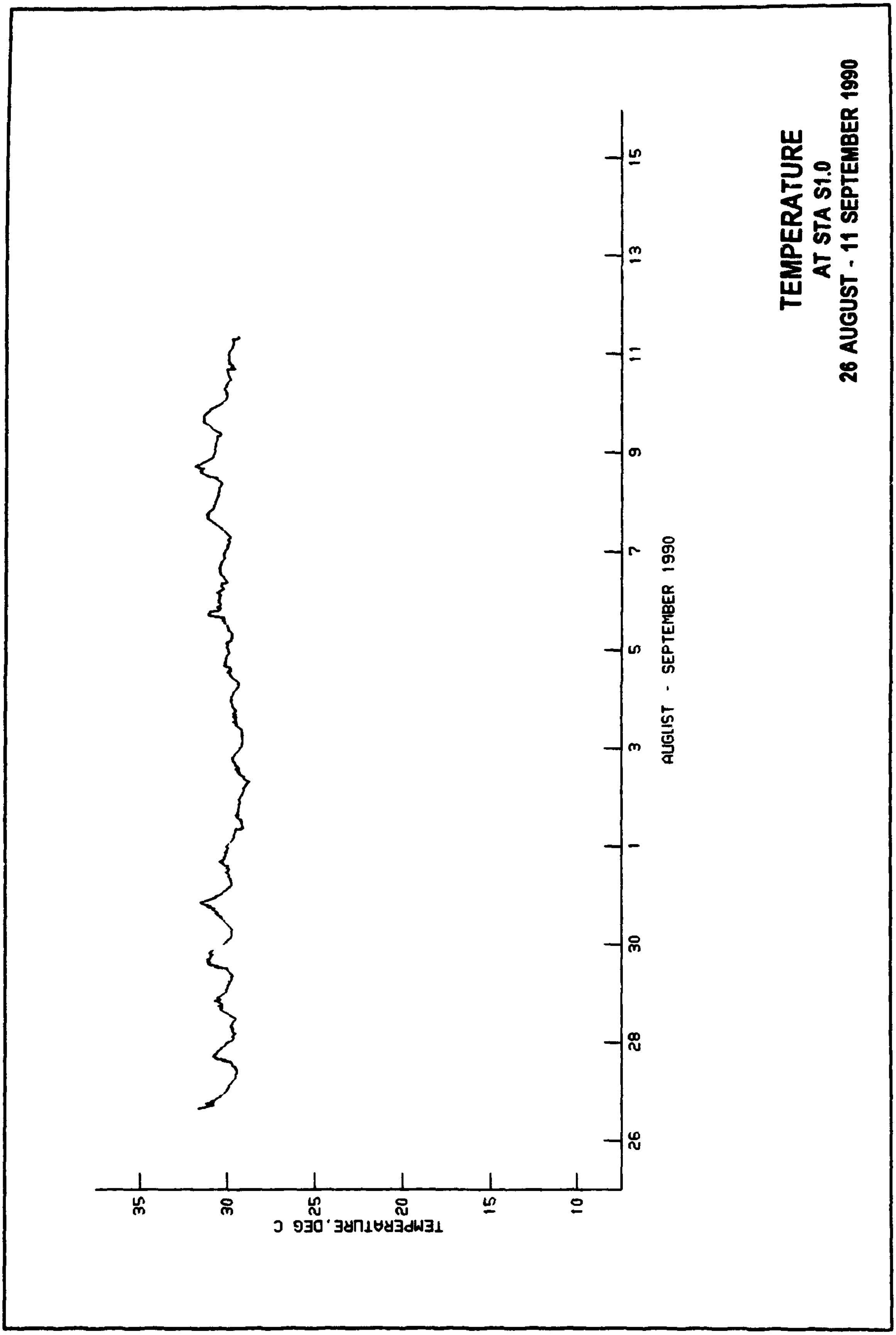
Plate 276


TEMPERATURE
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26 AUGUST - 11 SEPTEMBER 1990
TEMPERATURE, DEG C
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26
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30
1
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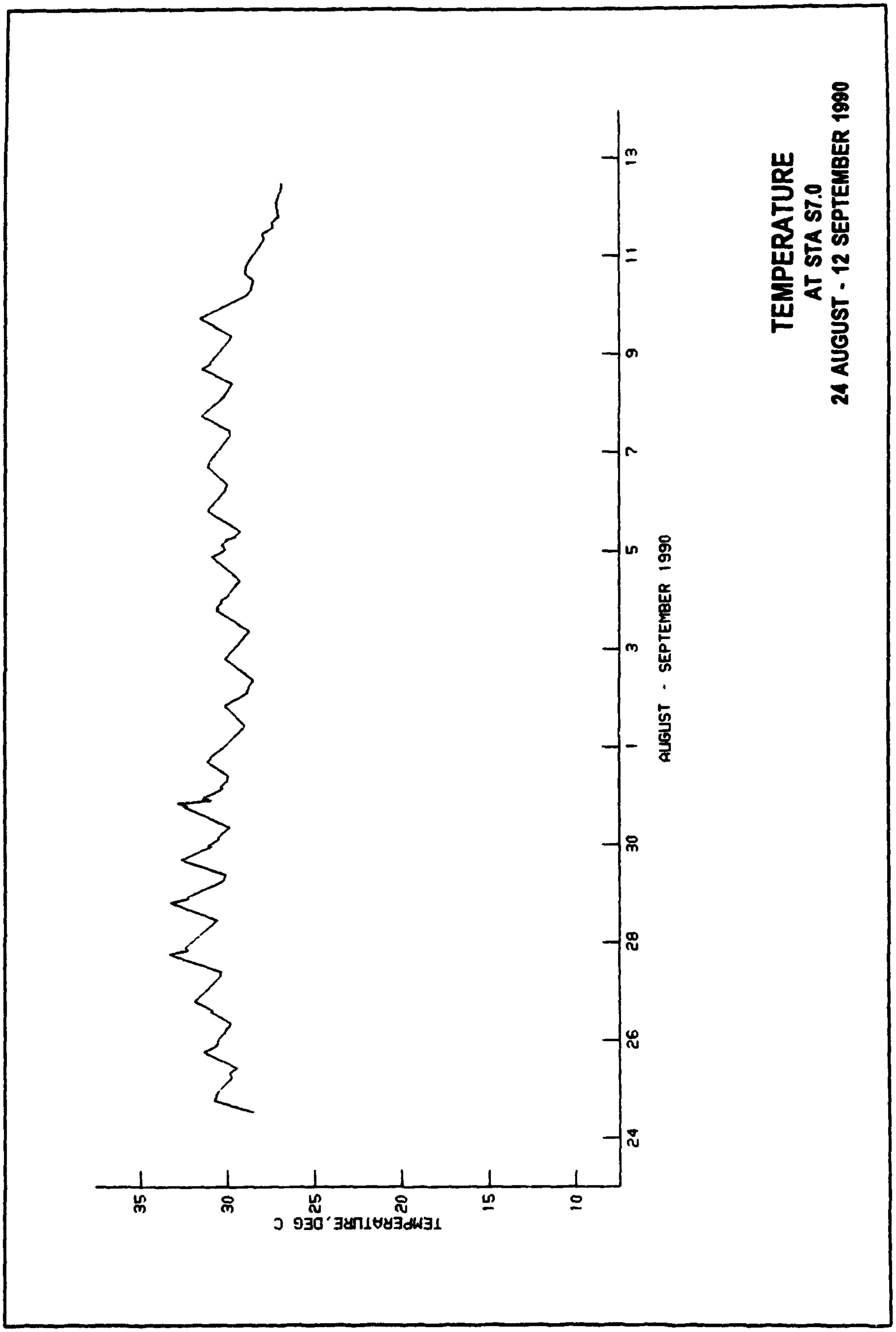
13
15
AUGUST - SEPTEMBER 1990


TEMPERATURE
AT STA S7.0
24 AUGUST - 12 SEPTEMBER 1990
AUGUST - SEPTEMBER 1990
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26
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30
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TEMPERATURE, DEG C
35
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15
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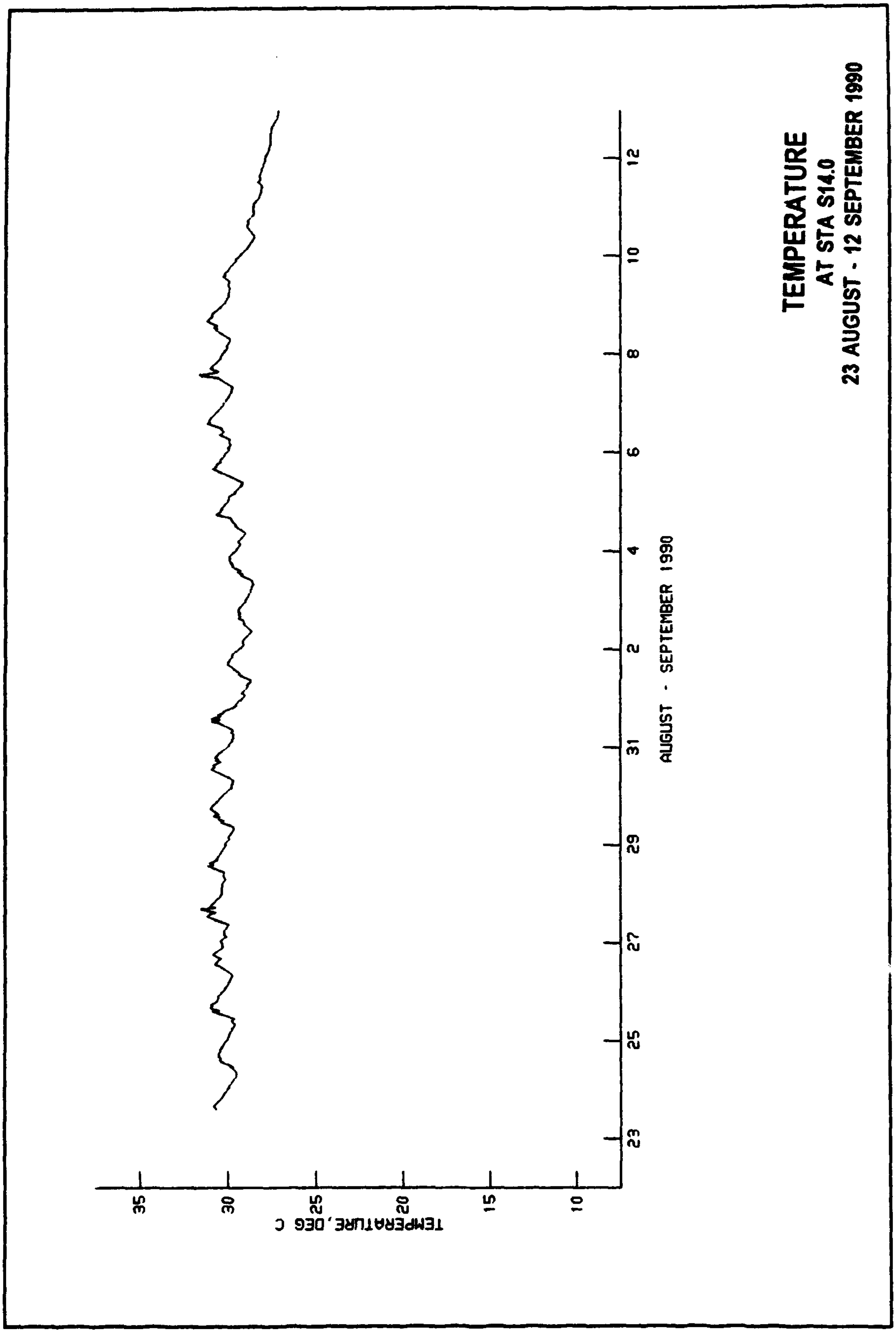
Plate 278


TEMPERATURE
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23 AUGUST - 12 SEPTEMBER 1990
TEMPERATURE, DEG C
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AUGUST - SEPTEMBER 1990
23
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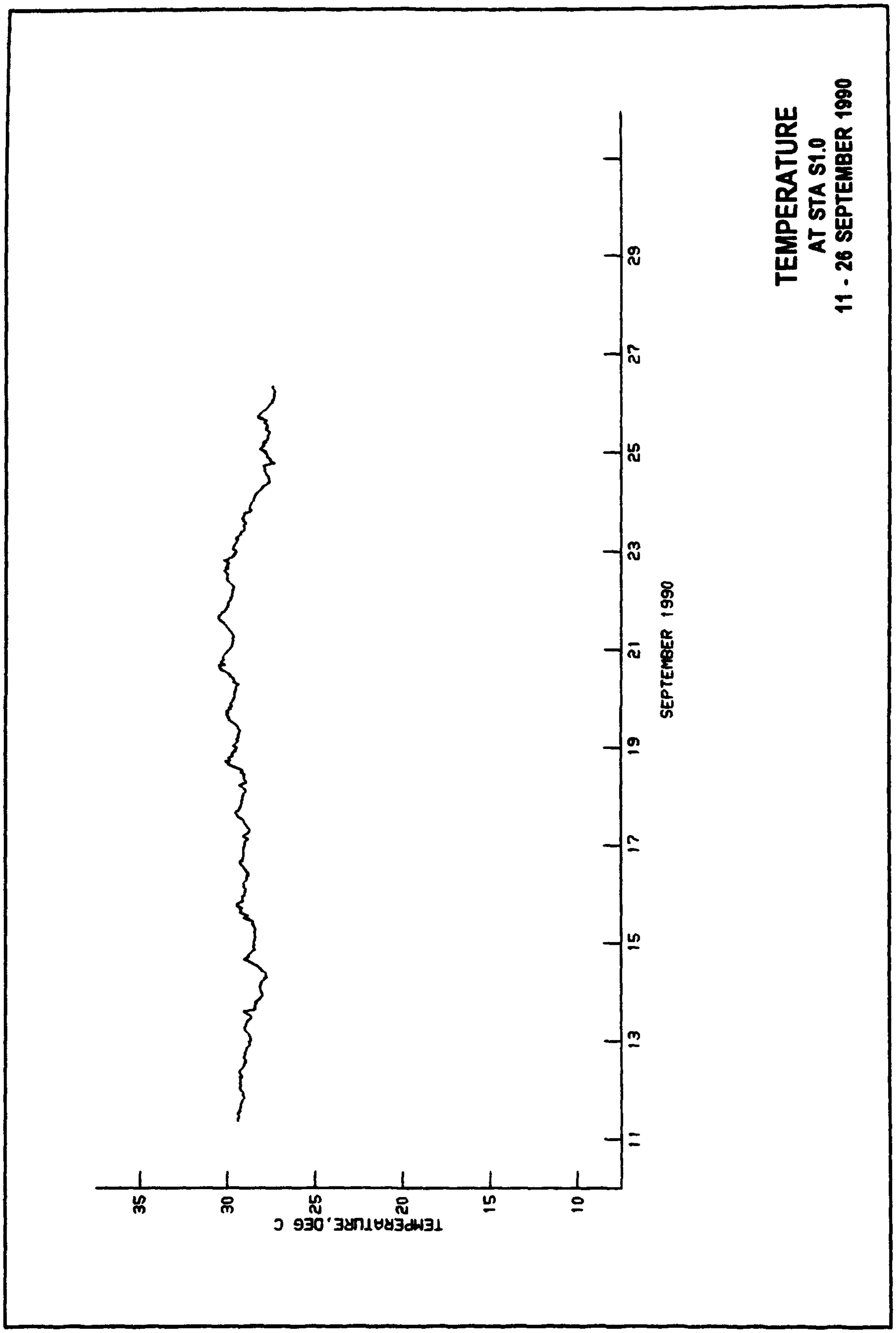
Plate 279


TEMPERATURE
AT STA S1.0
11 - 26 SEPTEMBER 1990
SEPTEMBER 1990
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TEMPERATURE, DEG C
35
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15
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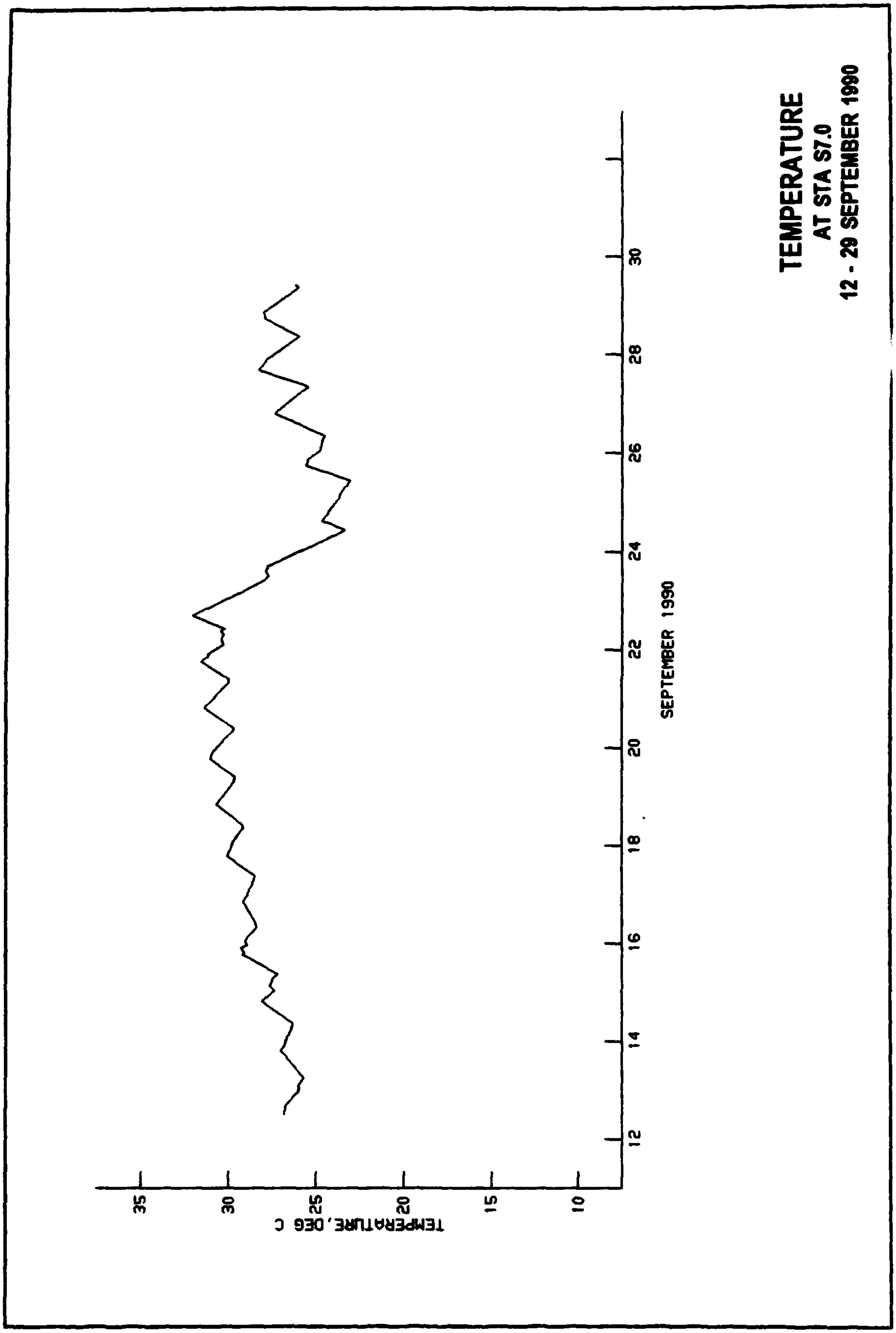
Plate 280



TEMPERATURE
AT STA S7.0
12 - 29 SEPTEMBER 1990
TEMPERATURE, DEG C
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SEPTEMBER 1990
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16
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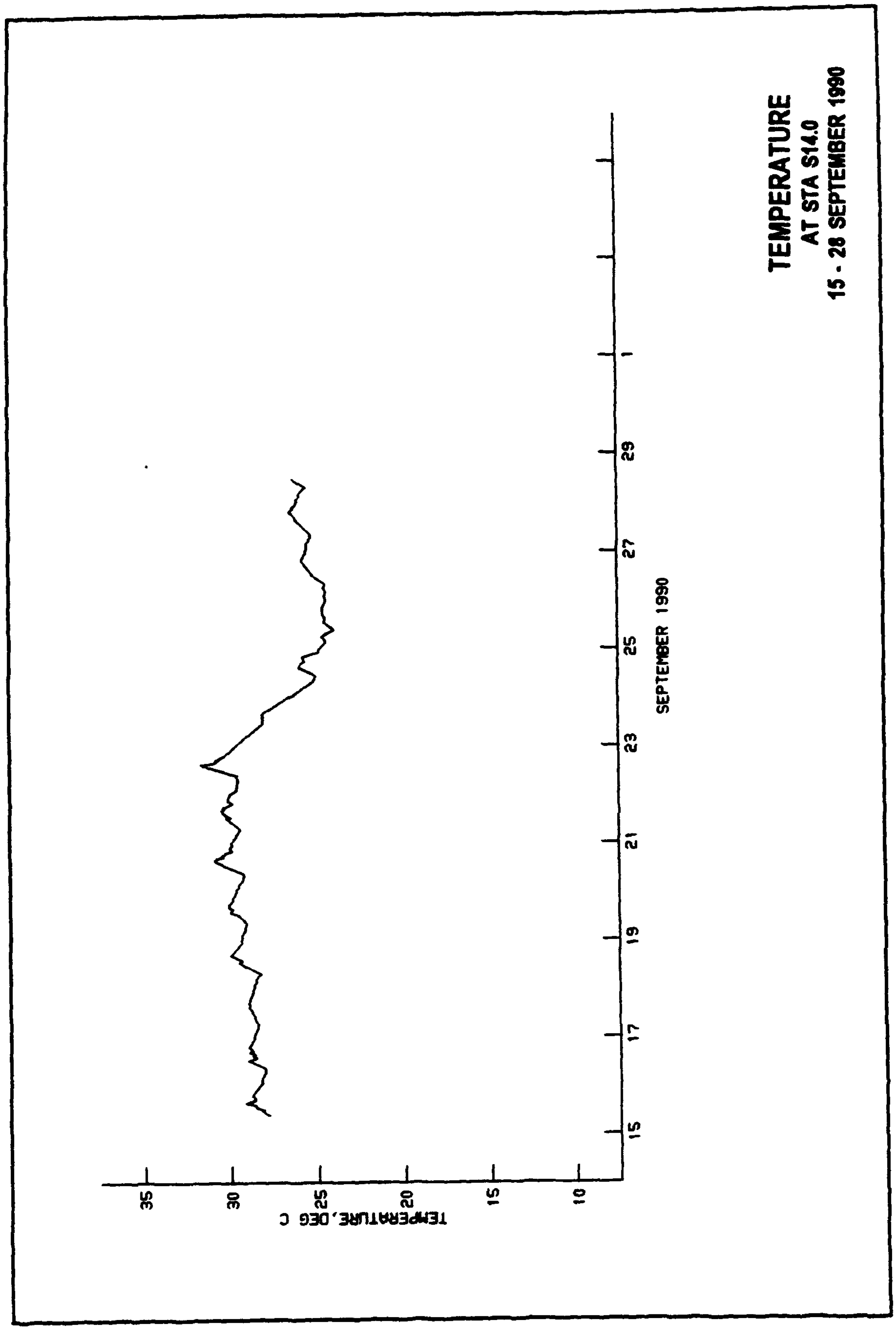
TEMPERATURE
AT STA S14.0
15 - 28 SEPTEMBER 1990
TEMPERATURE, DEG C
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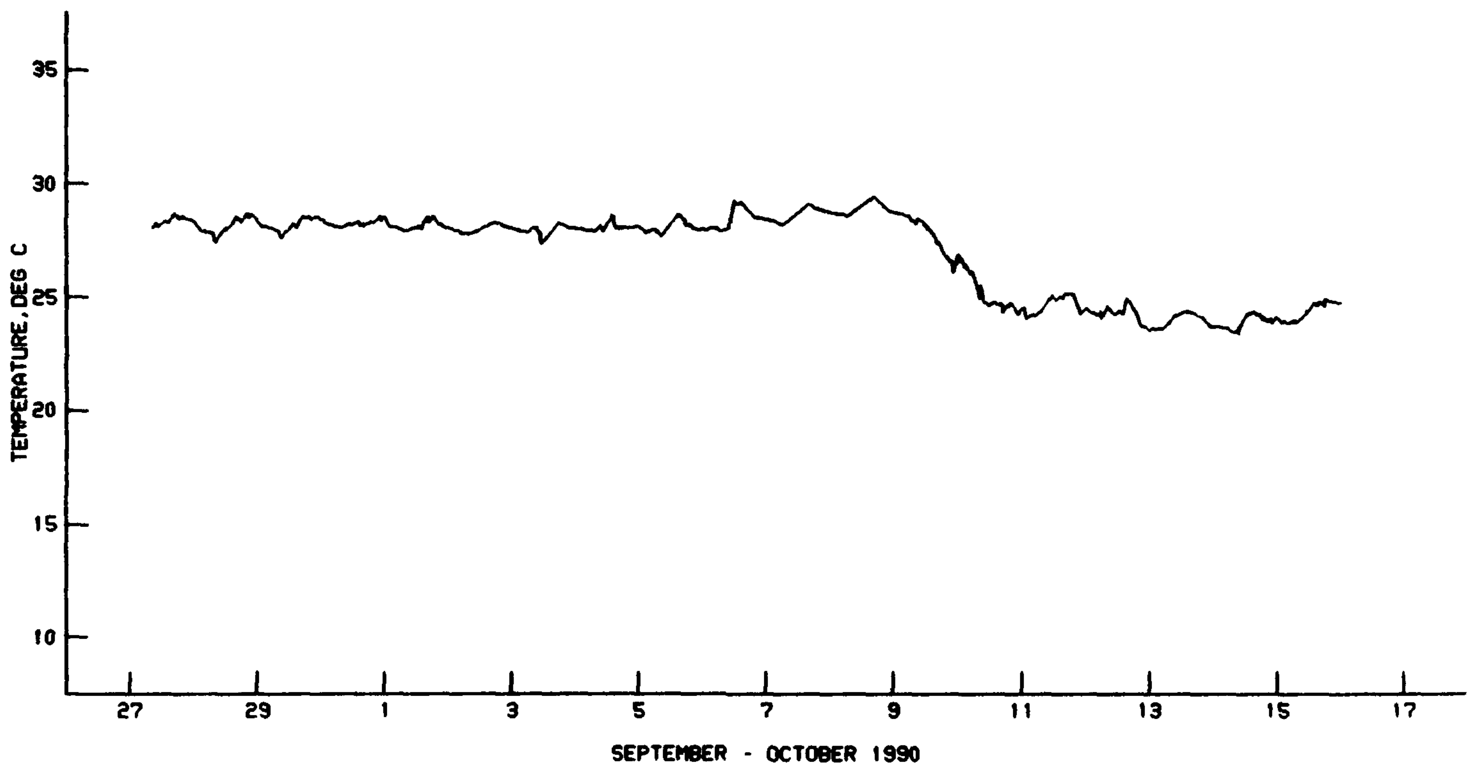
29
1
SEPTEMBER 1990

Plate 282



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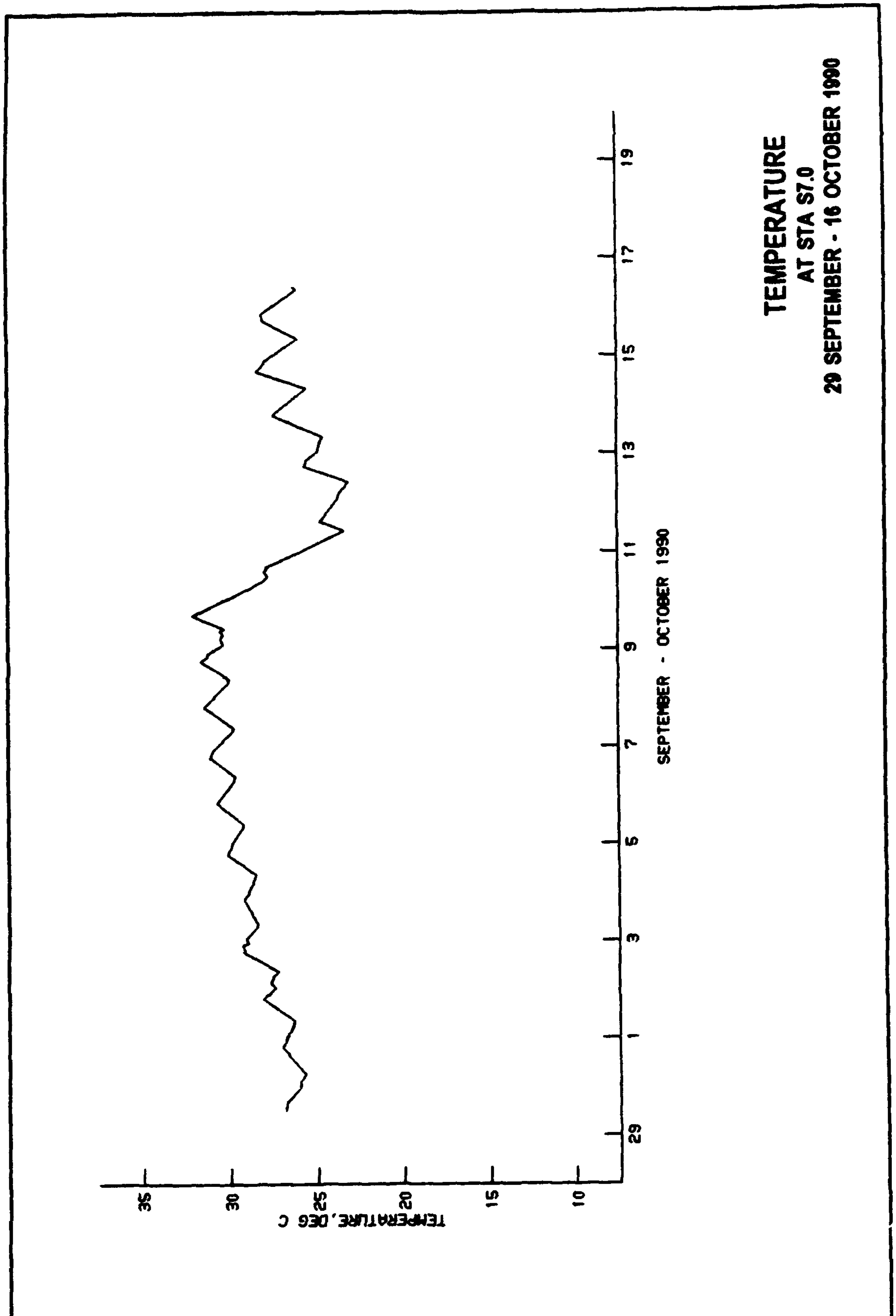
TEMPERATURE
AT STA S7.0
29 SEPTEMBER - 16 OCTOBER 1990
TEMPERATURE, DEG C
10
15
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SEPTEMBER - OCTOBER 1990
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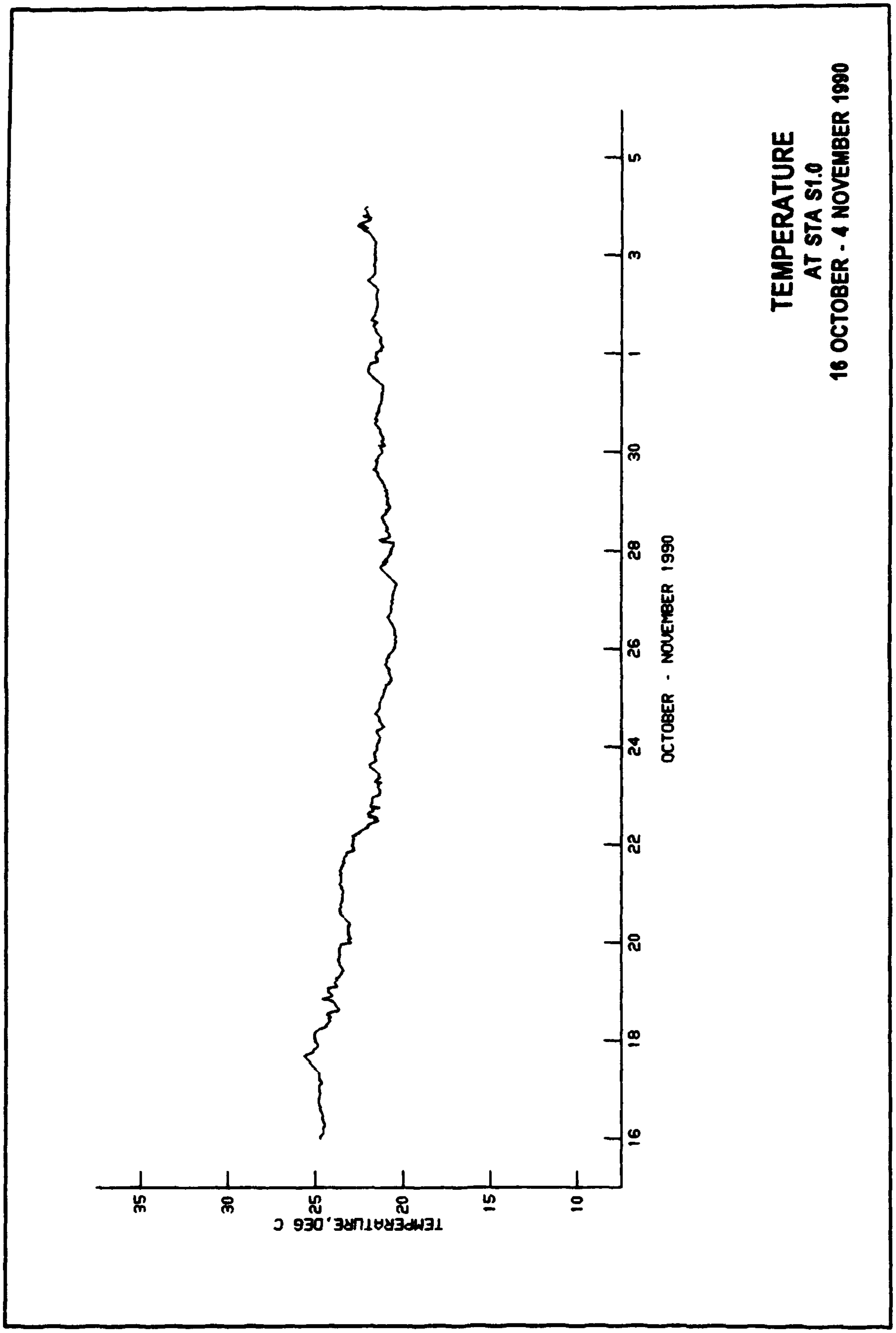
Plate 284


TEMPERATURE
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16 OCTOBER - 4 NOVEMBER 1990
TEMPERATURE, DEG C
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24
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28
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1
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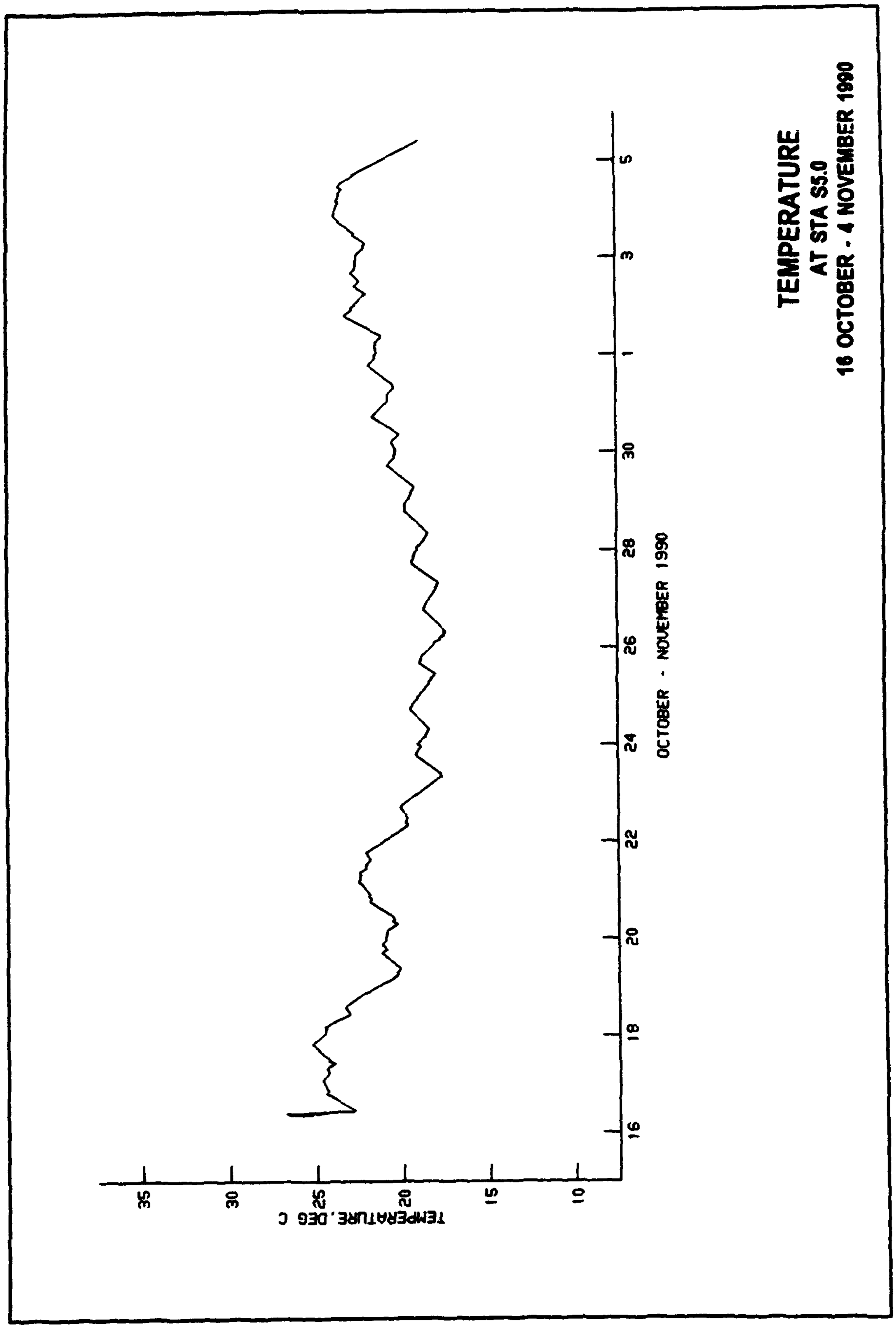
5
OCTOBER - NOVEMBER 1990

Plate 285



TEMPERATURE
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TEMPERATURE, DEG C
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OCTOBER - NOVEMBER 1990
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30
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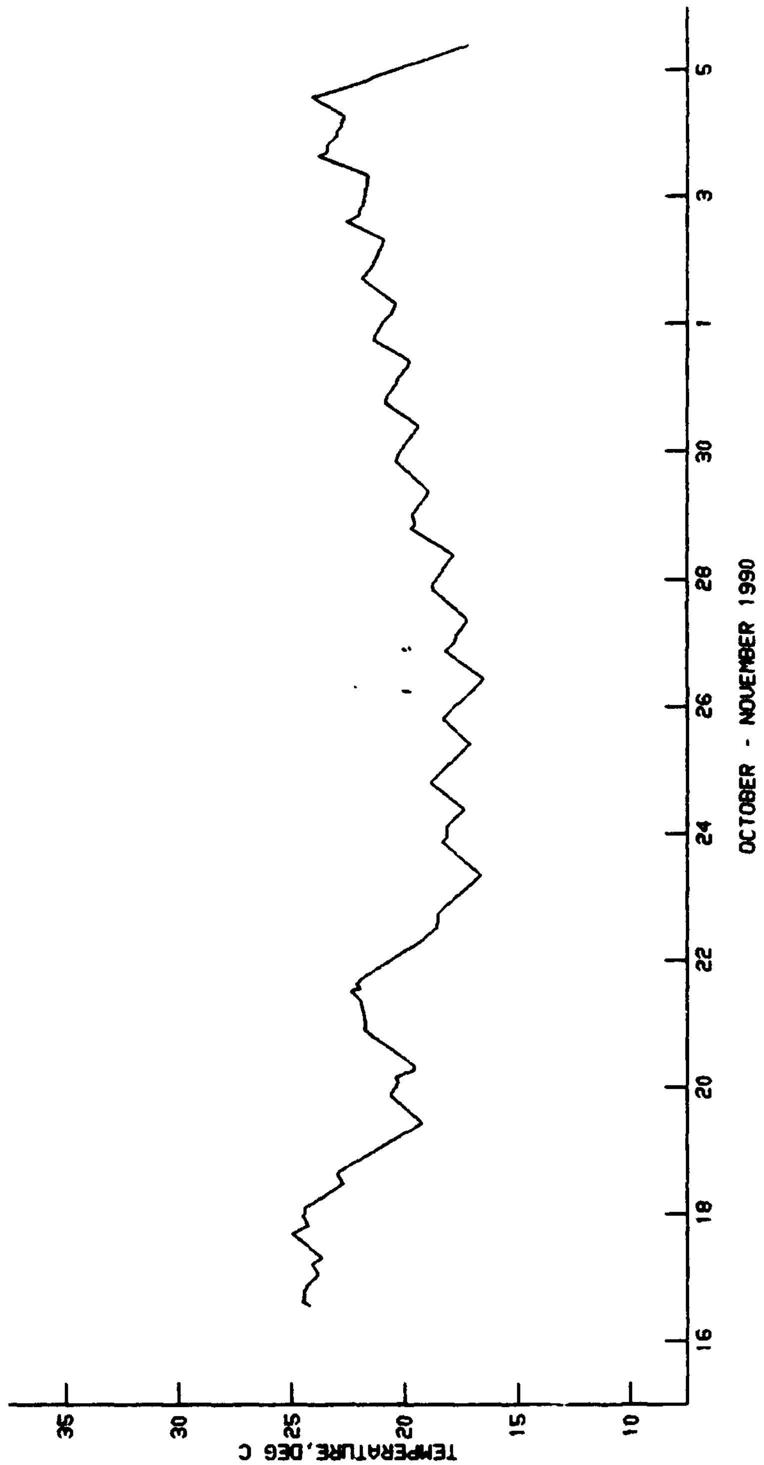
Plate 286



TEMPERATURE
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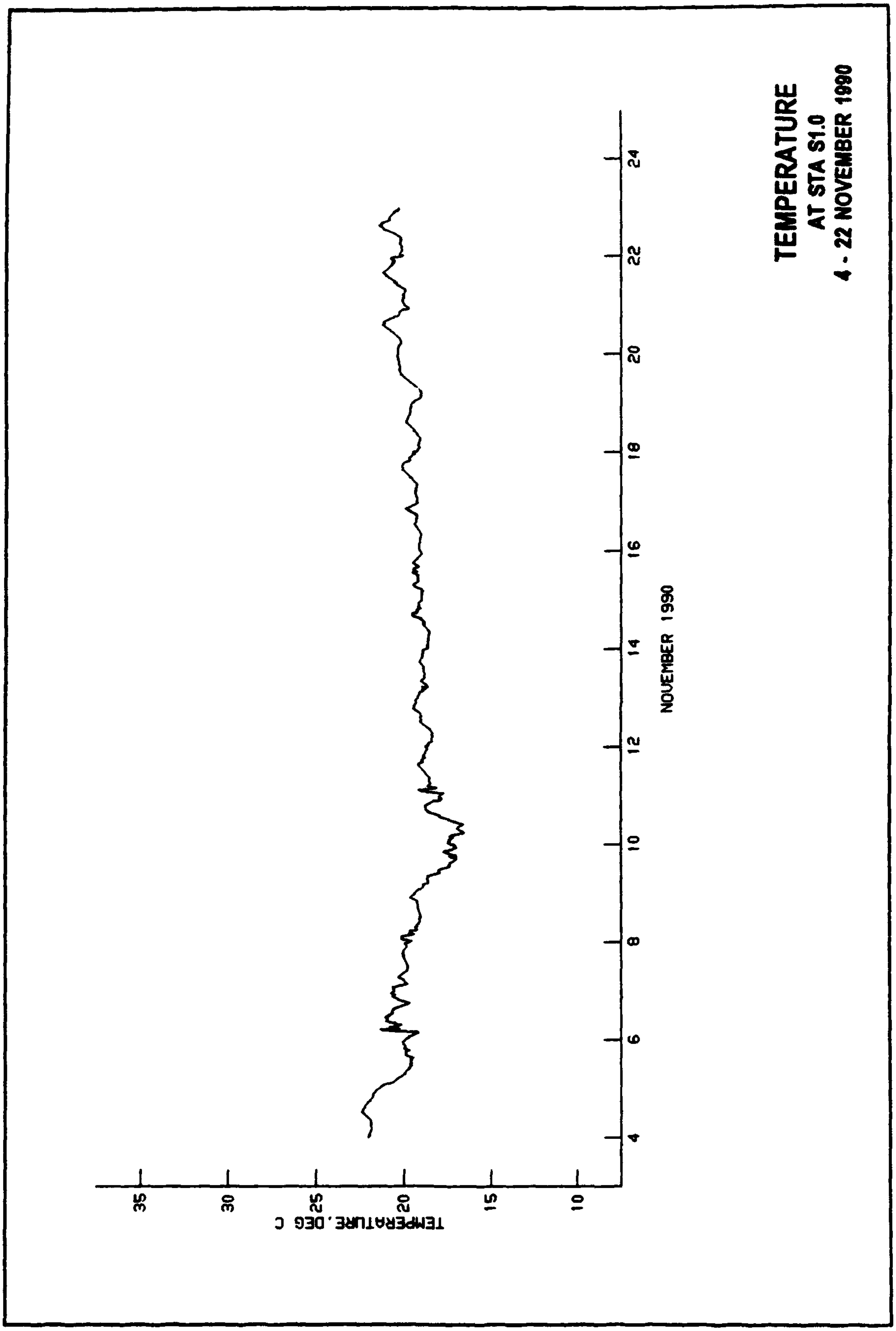
TEMPERATURE
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4 - 22 NOVEMBER 1990
TEMPERATURE, DEG C
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10
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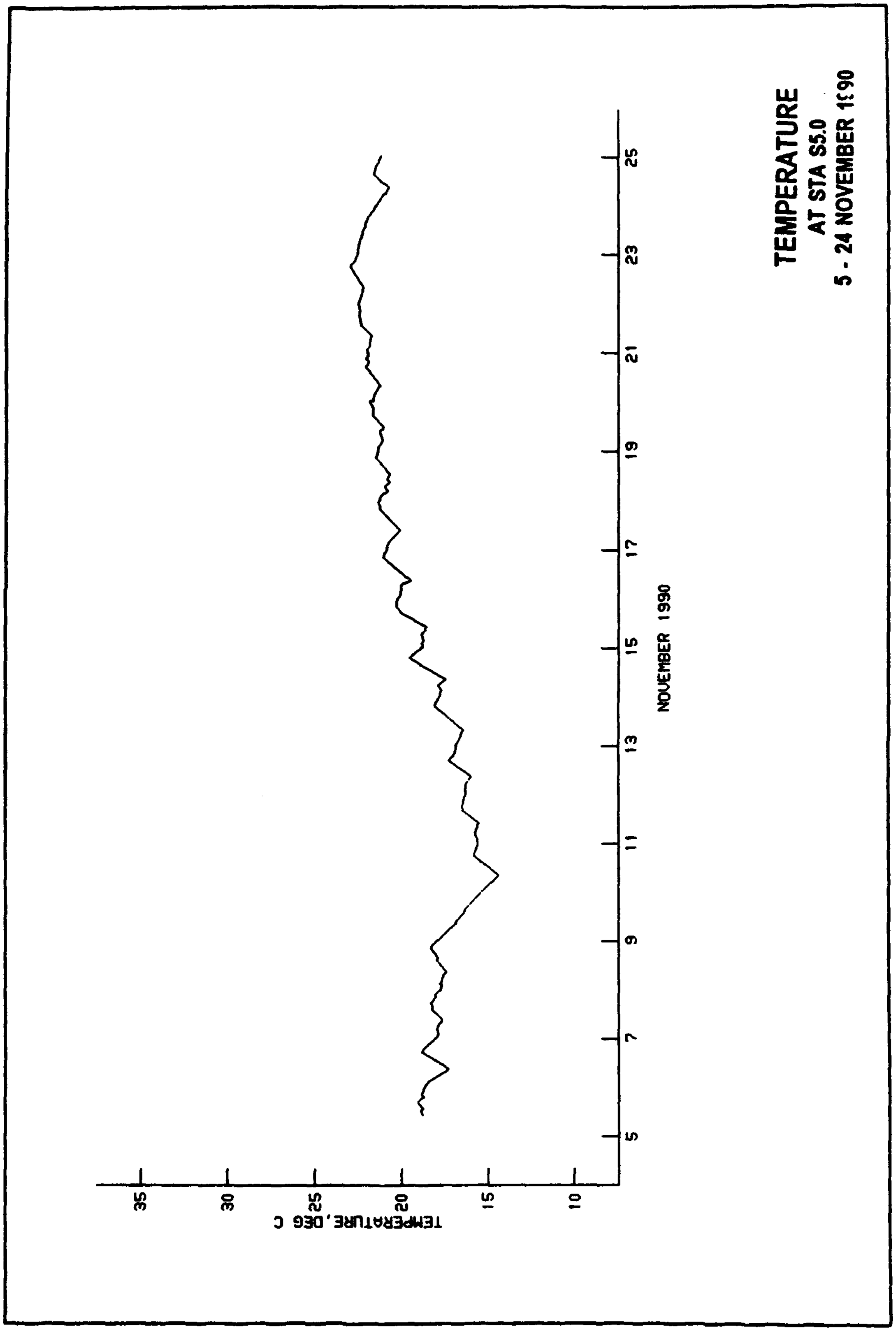
14
16
18
20
22
24
NOVEMBER 1990

Plate 288


TEMPERATURE
AT STA S5.0
5 - 24 NOVEMBER 1990
TEMPERATURE, DEG C
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NOVEMBER 1990
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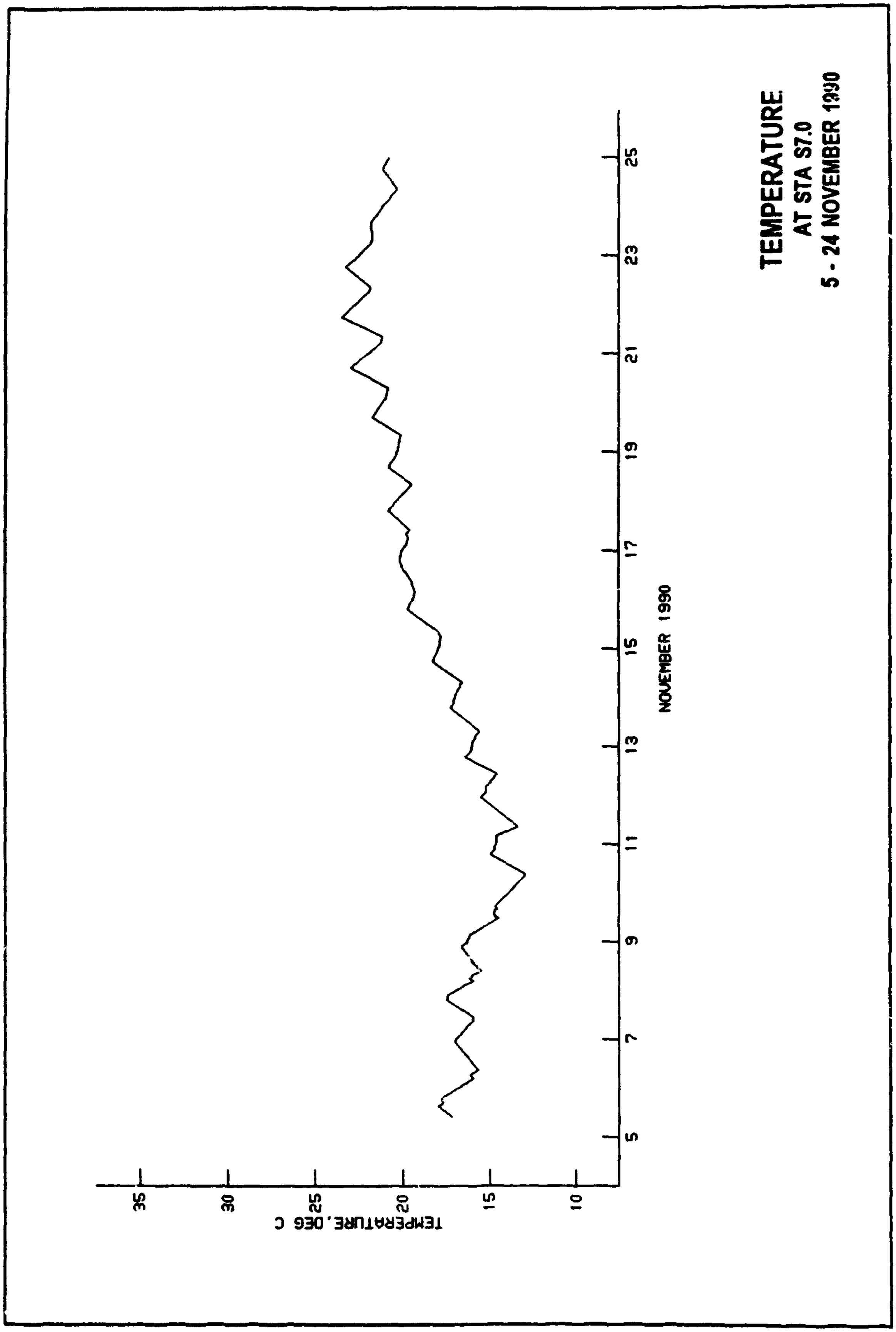
21
23
25


TEMPERATURE
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TEMPERATURE, DEG C
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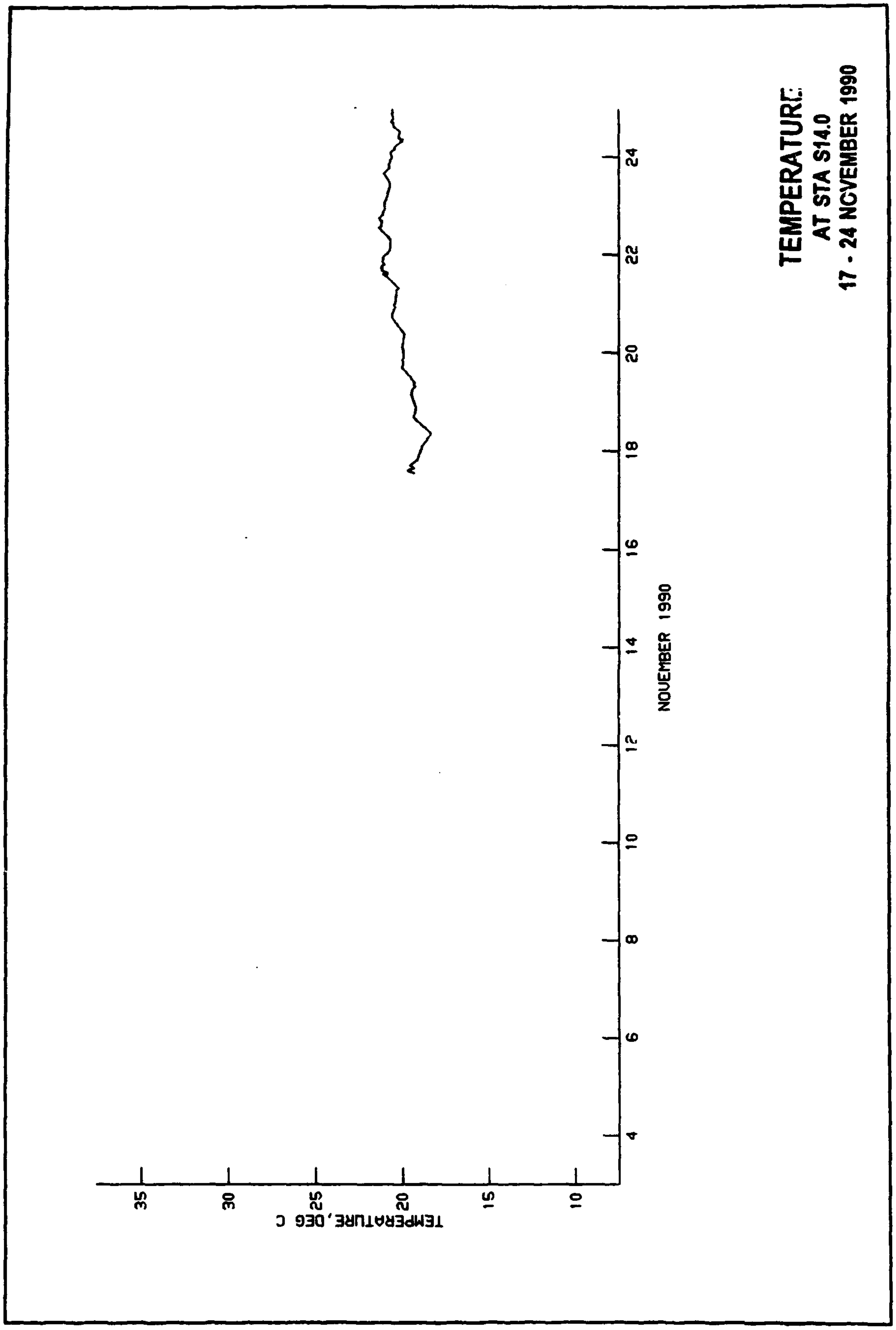
Plate 290


TEMPERATURE
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TEMPERATURE, DEG C
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NOVEMBER 1990
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12
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16
18
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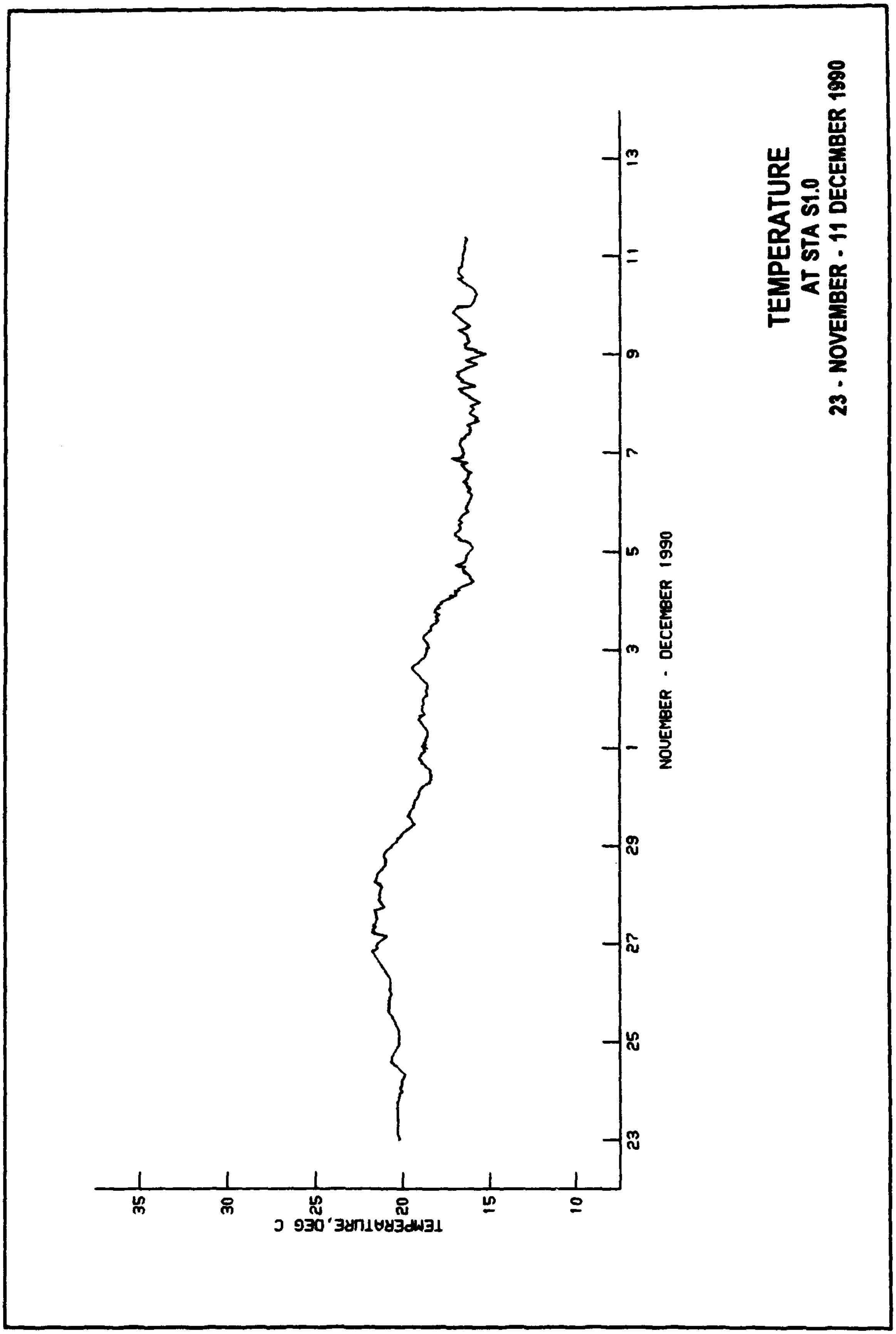
22
24

Plate 291


TEMPERATURE
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TEMPERATURE, DEG C
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NOVEMBER - DECEMBER 1990
23
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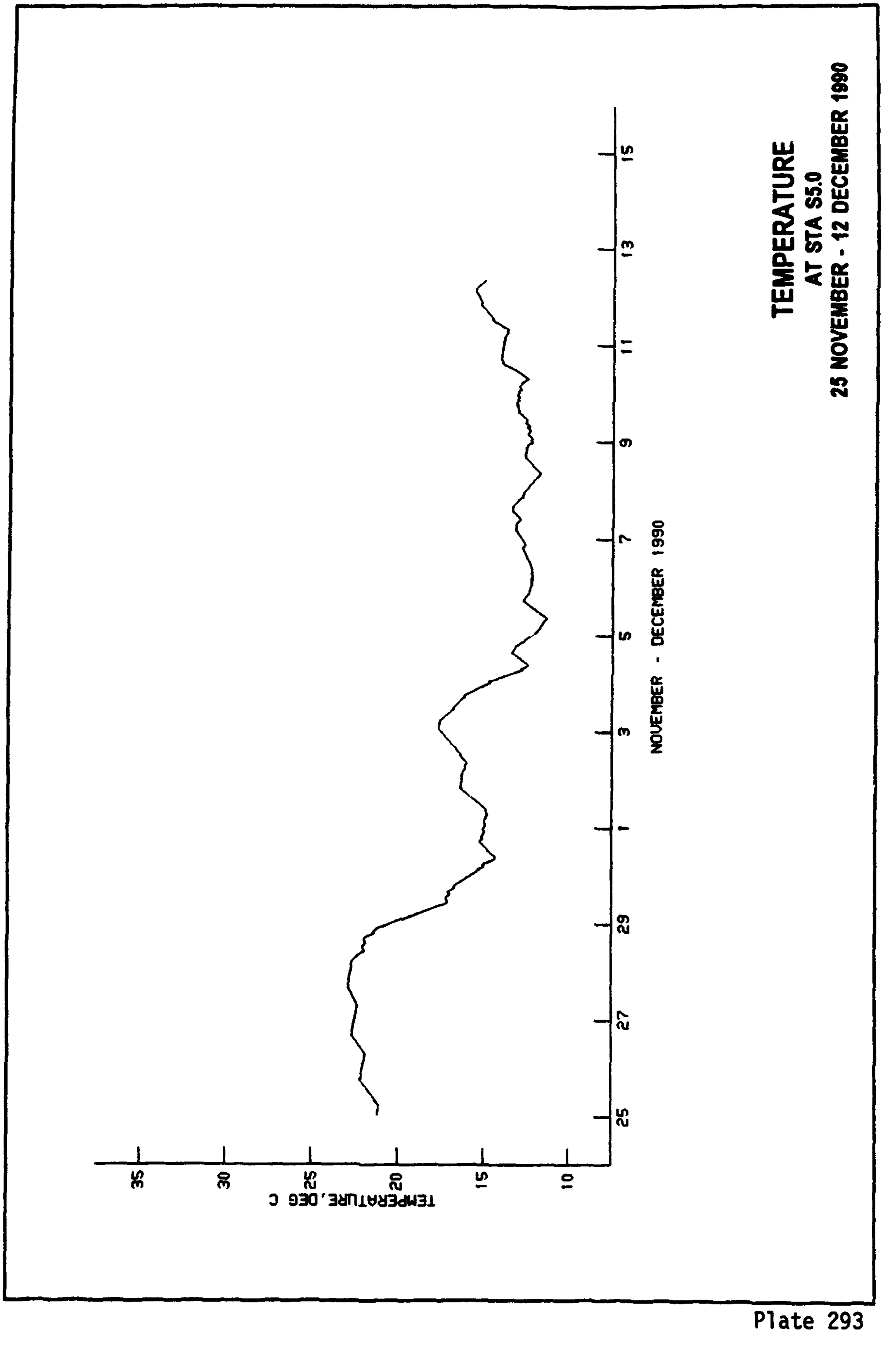
Plate 292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TEMPERATURE, DEG C
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NOVEMBER - DECEMBER 1990
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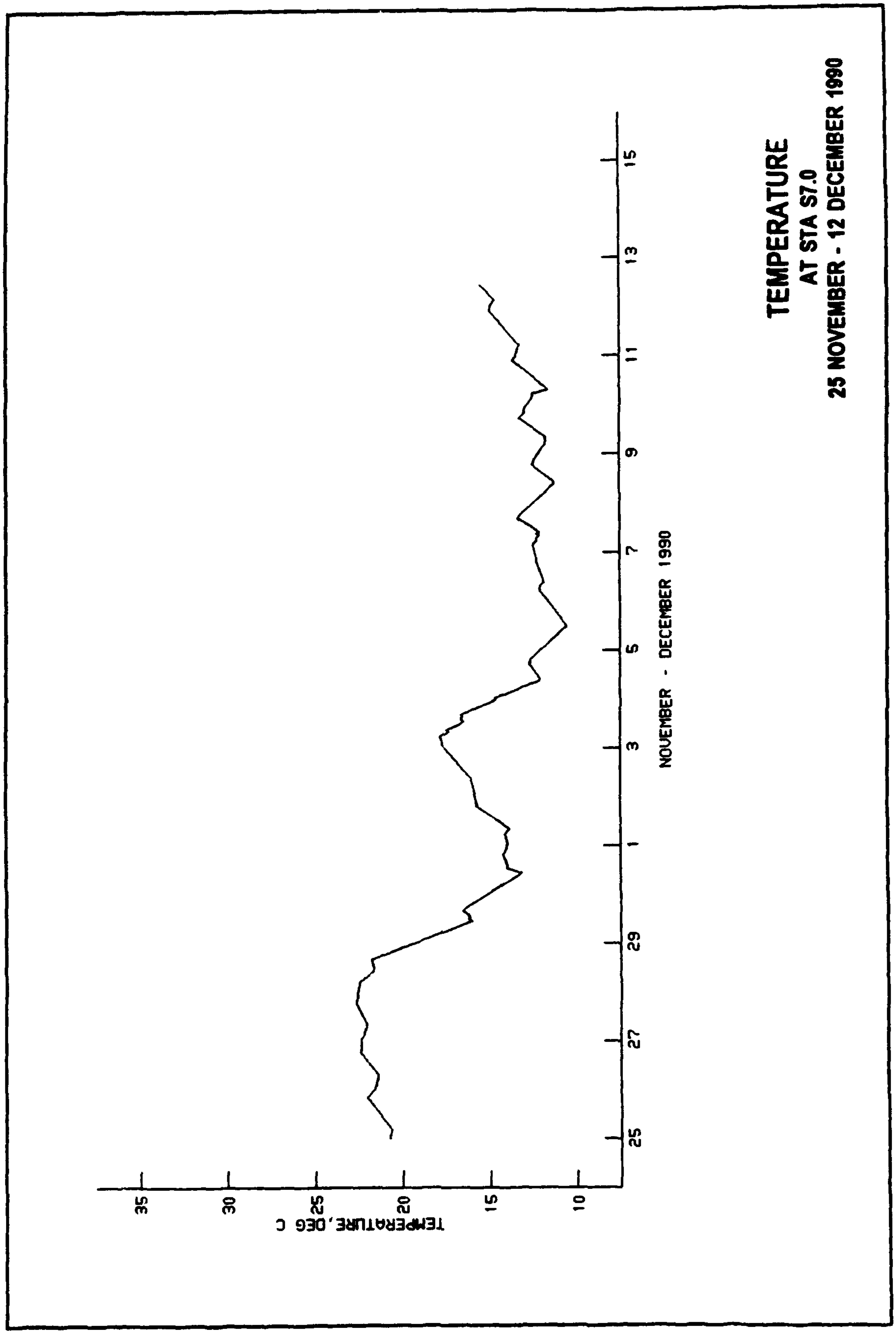
11
13
15

Plate 293


TEMPERATURE
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TEMPERATURE, DEG C
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NOVEMBER - DECEMBER 1990
25
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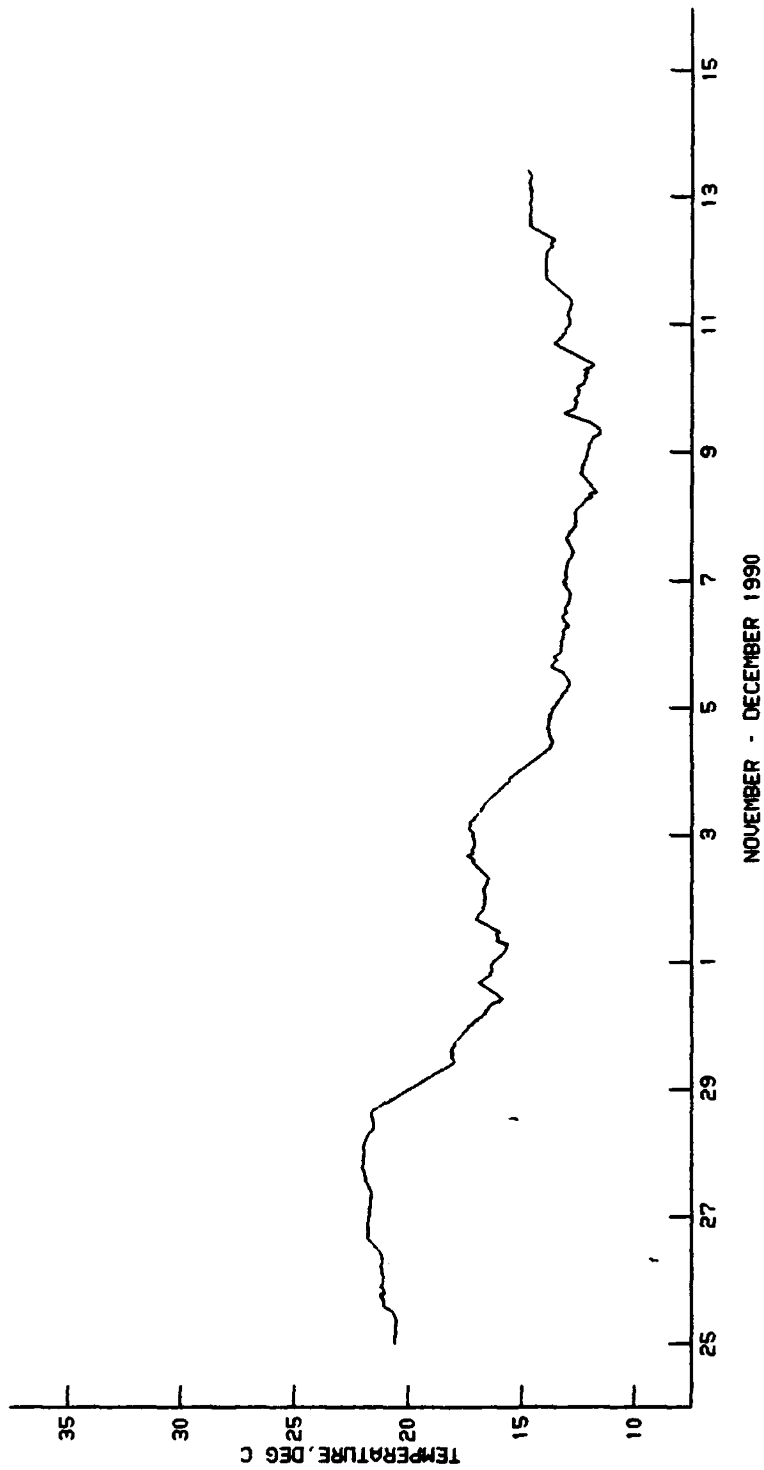
Plate 294



TEMPERATURE
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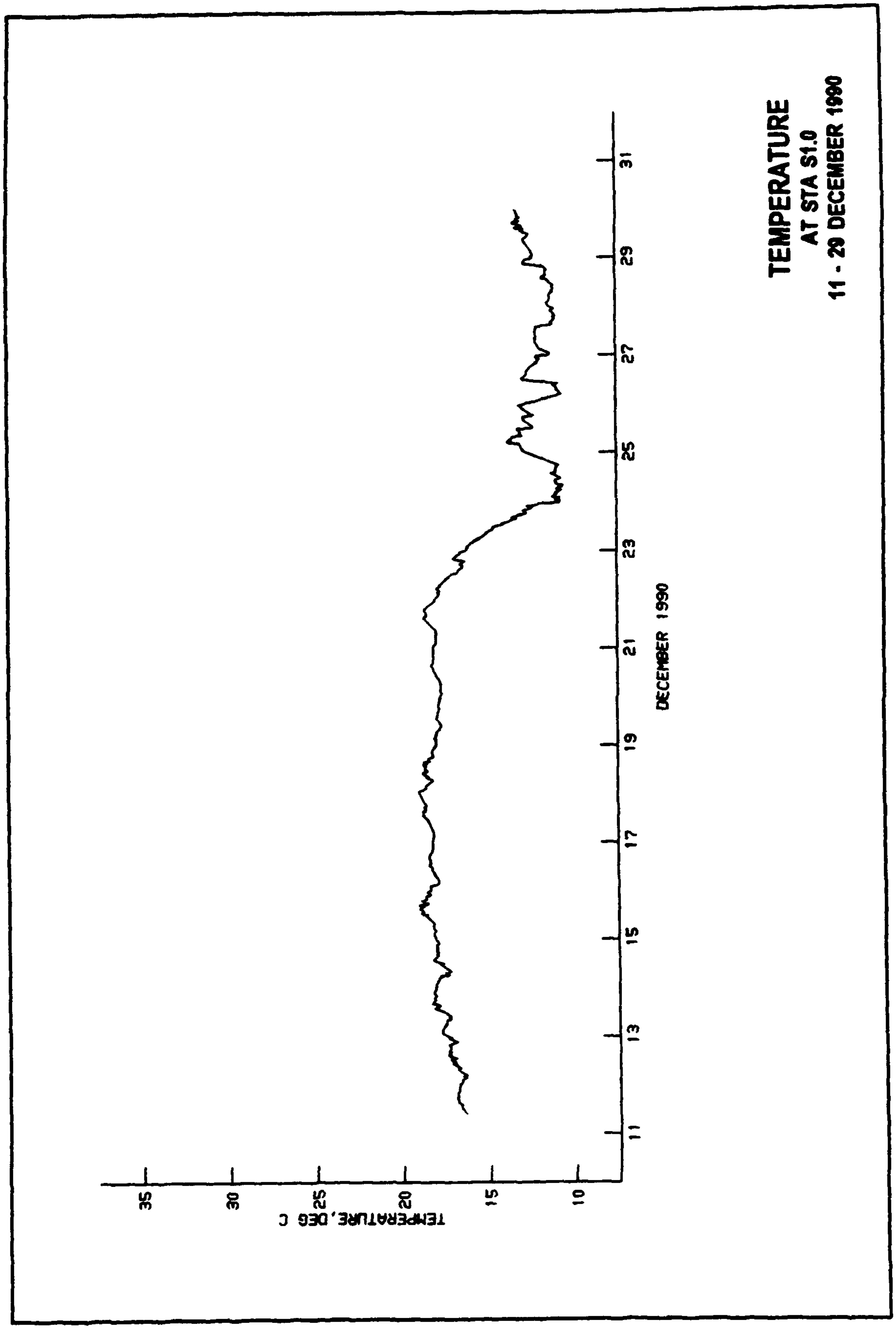
25 NOVEMBER - 13 DECEMBER 1990


TEMPERATURE
AT STA S1.0
11 - 29 DECEMBER 1990
TEMPERATURE, DEG C
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DECEMBER 1990
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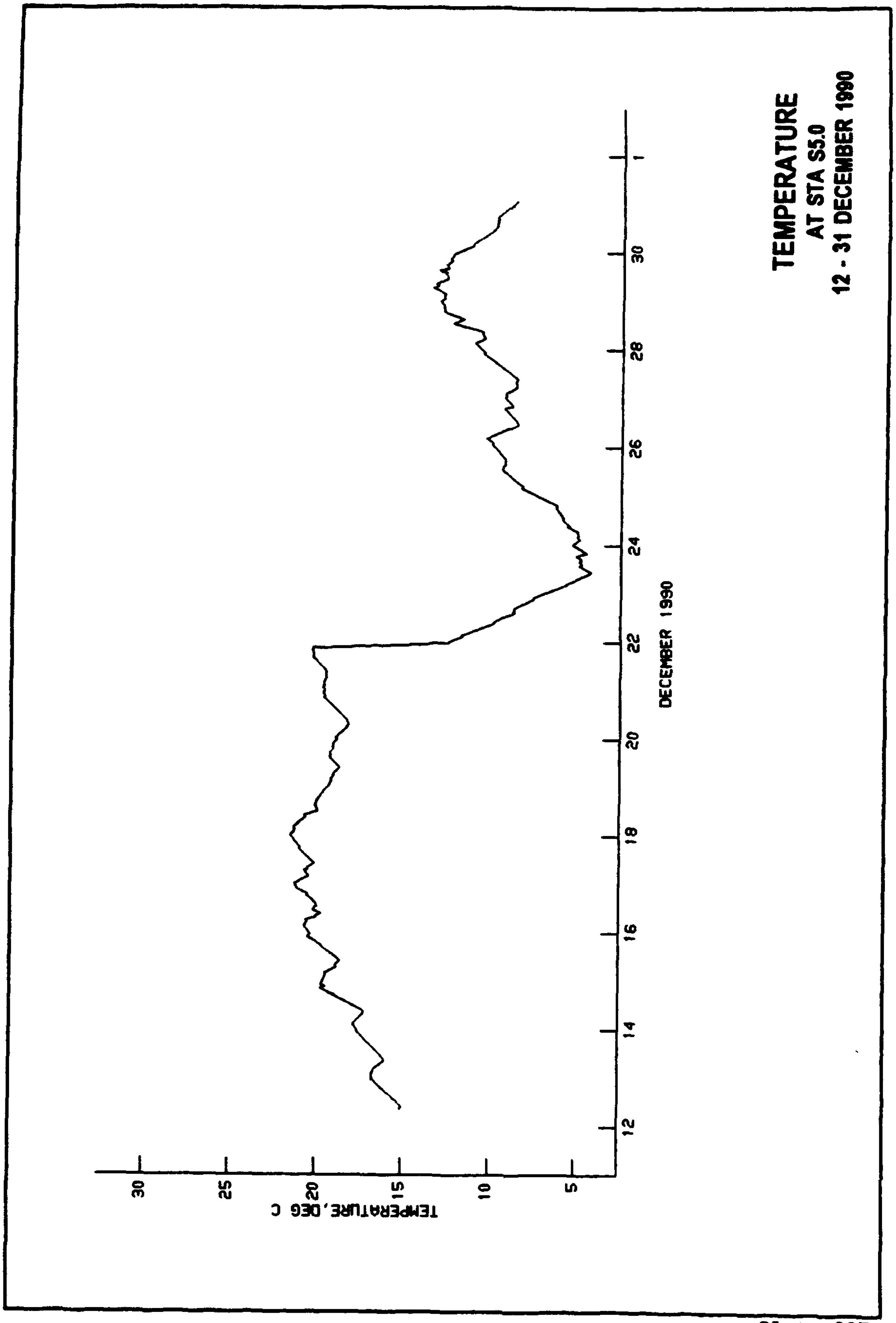
Plate 296


TEMPERATURE
AT STA S5.0
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TEMPERATURE, DEG C
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DECEMBER 1990
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26
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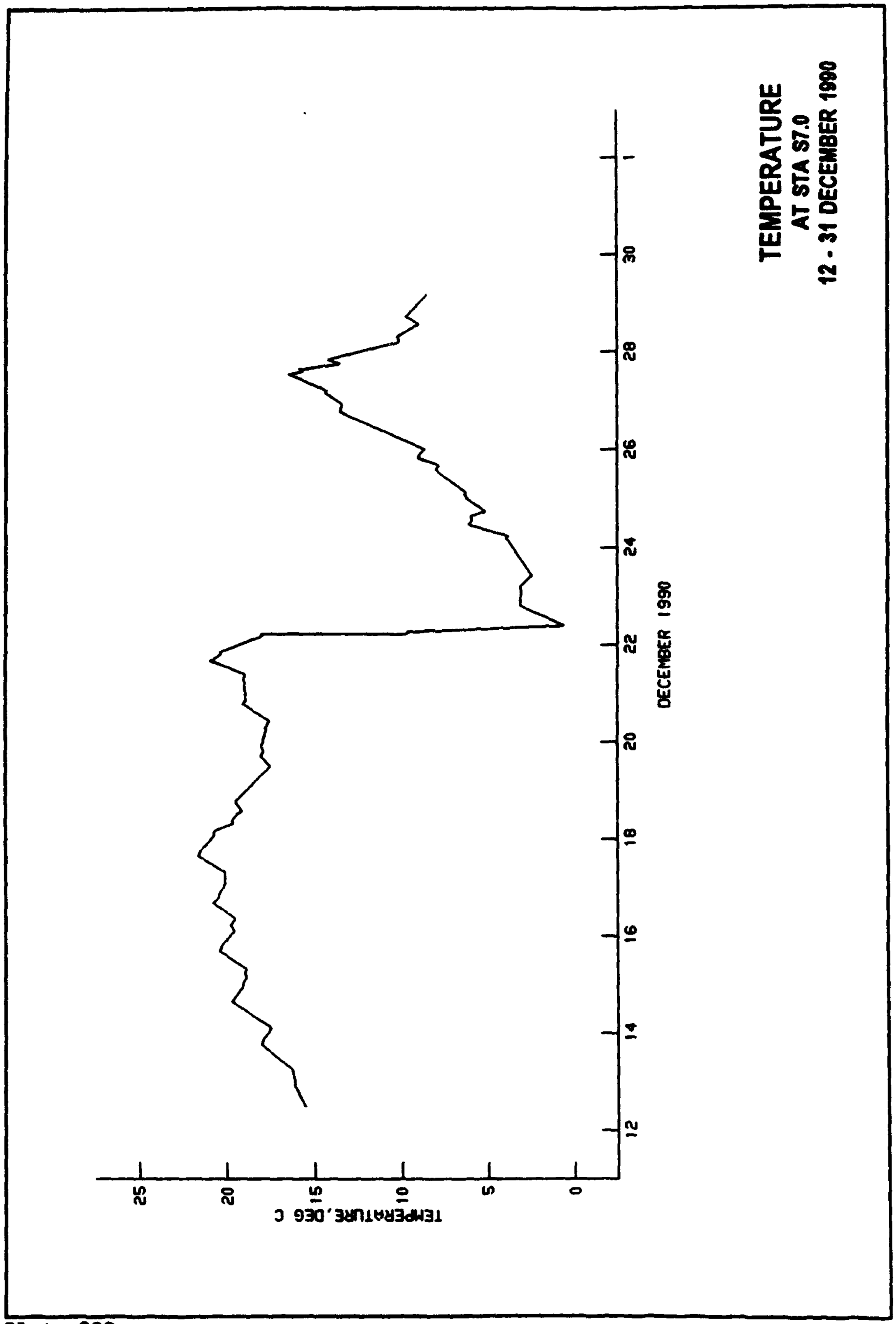
30
1

Plate 297



TEMPERATURE
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TEMPERATURE, DEG C
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DECEMBER 1990
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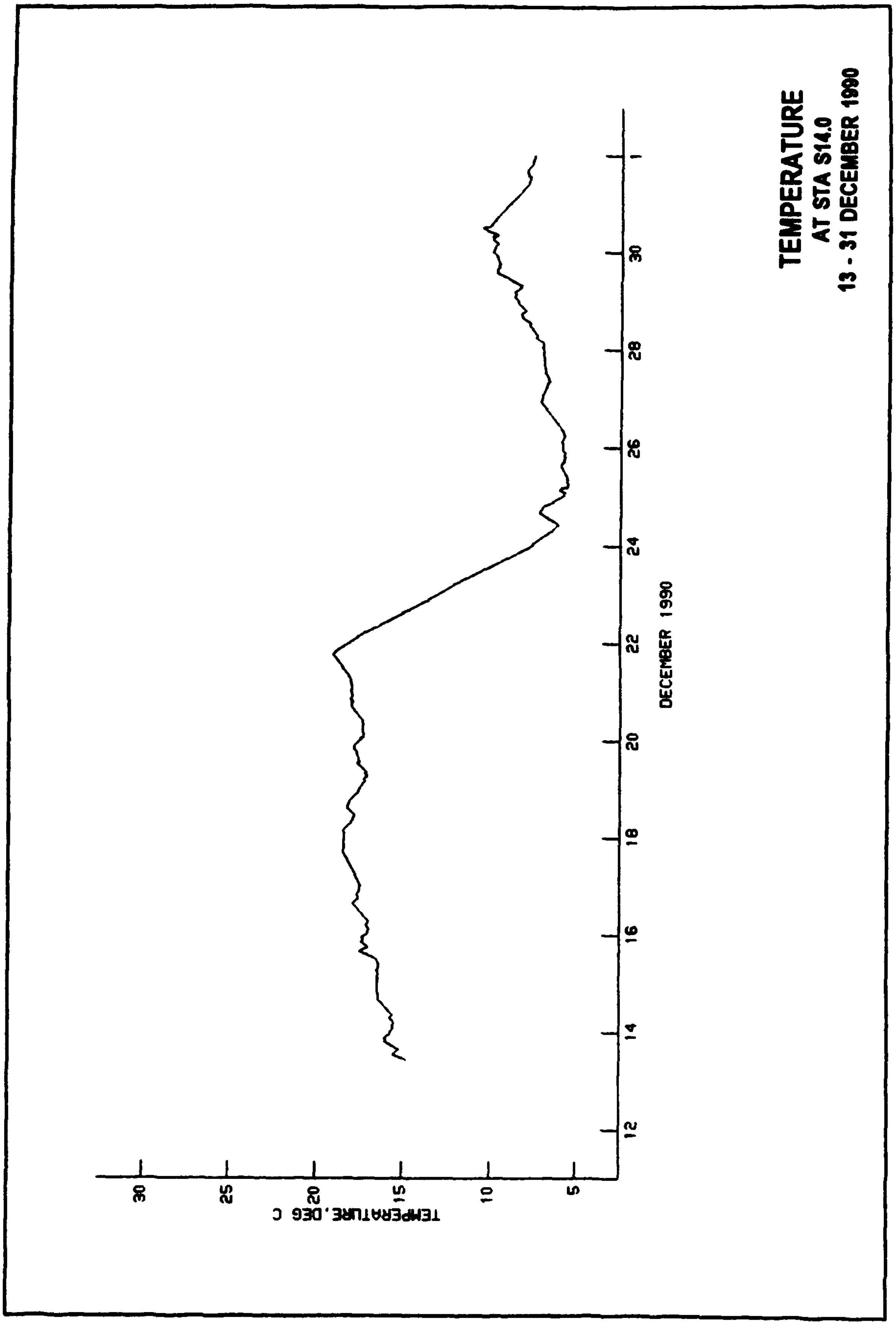
1

Plate 298



TEMPERATURE
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DECEMBER 1990
TEMPERATURE, DEG C
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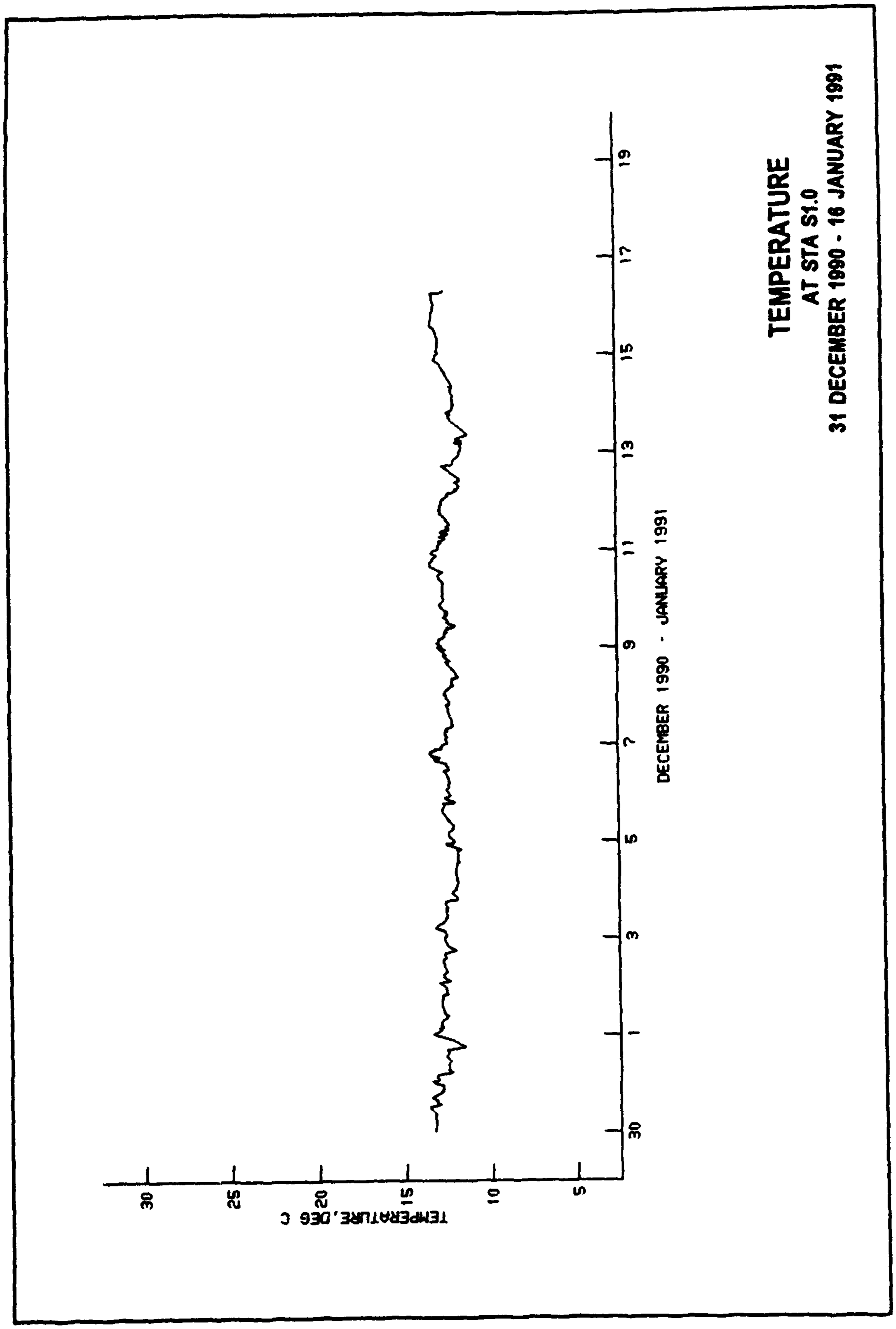
TEMPERATURE
AT STA S1.0
31 DECEMBER 1990 - 16 JANUARY 1991
TEMPERATURE, DEG C
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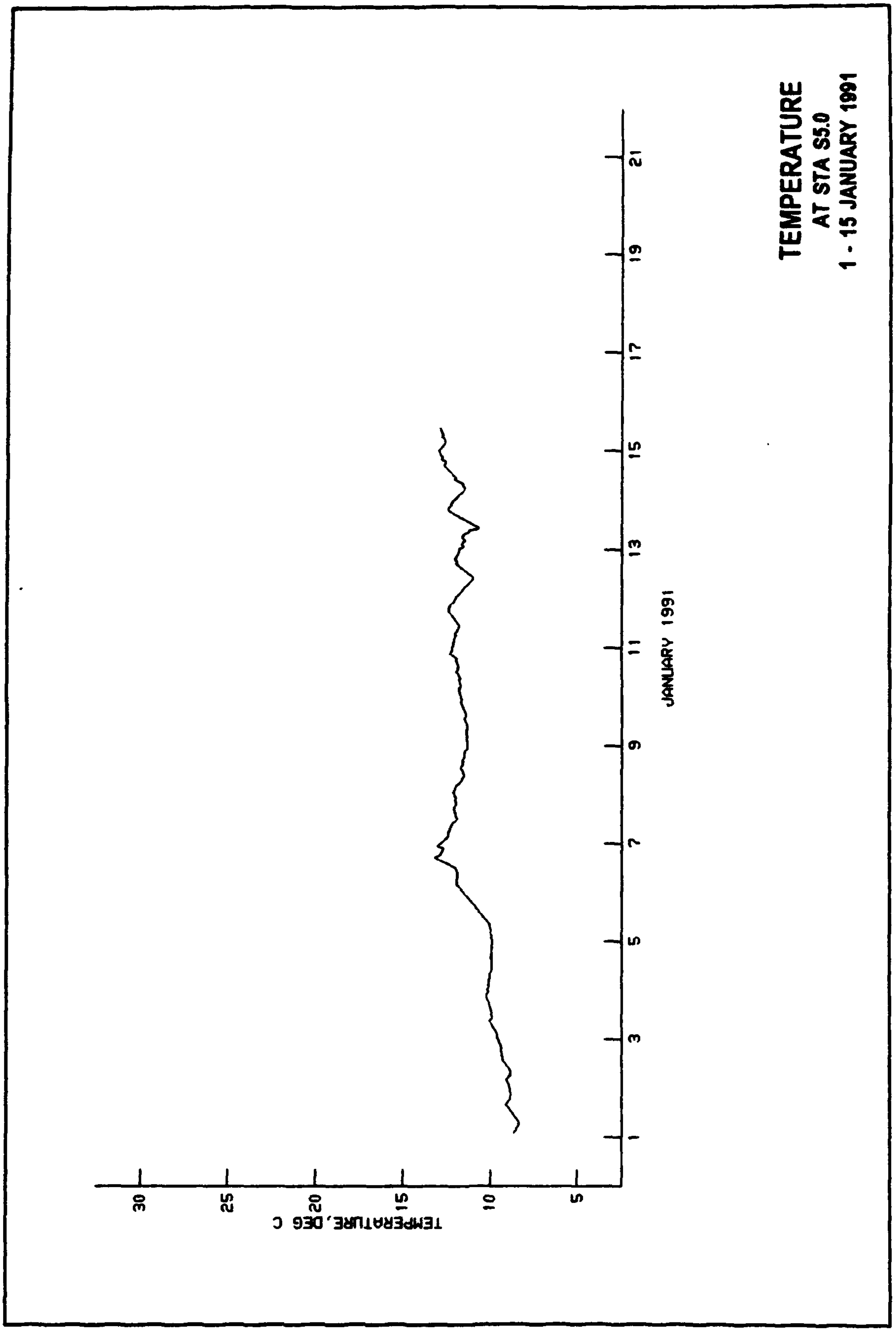
19
DECEMBER 1990 - JANUARY 1991

Plate 300


TEMPERATURE
AT STA S5.0
1 - 15 JANUARY 1991
TEMPERATURE, DEG C
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10
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9
11
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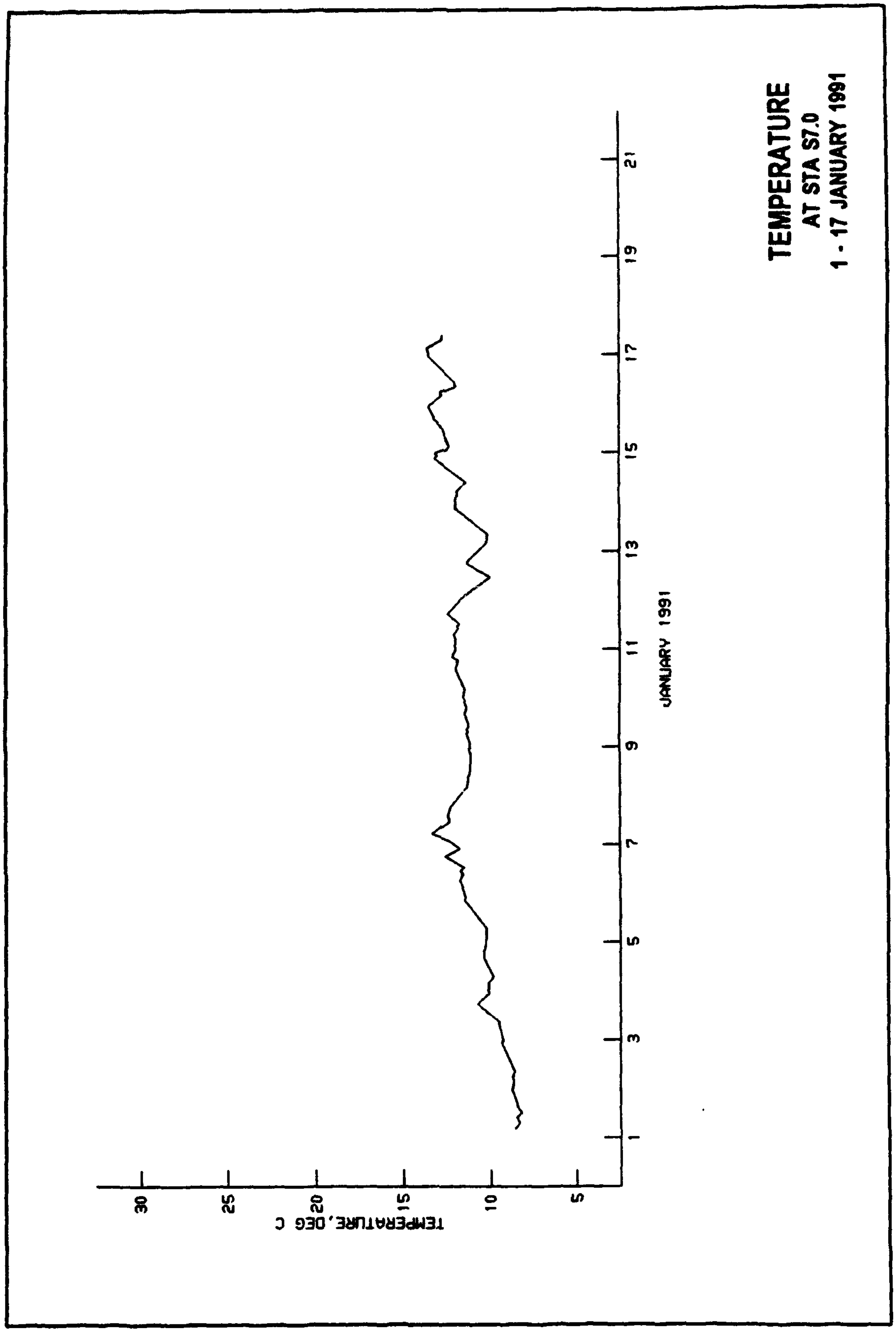
15
17
19
21
JANUARY 1991

Plate 301



TEMPERATURE
AT STA S7.0
1 - 17 JANUARY 1991
TEMPERATURE, DEG C
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10
15
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30
JANUARY 1991
1
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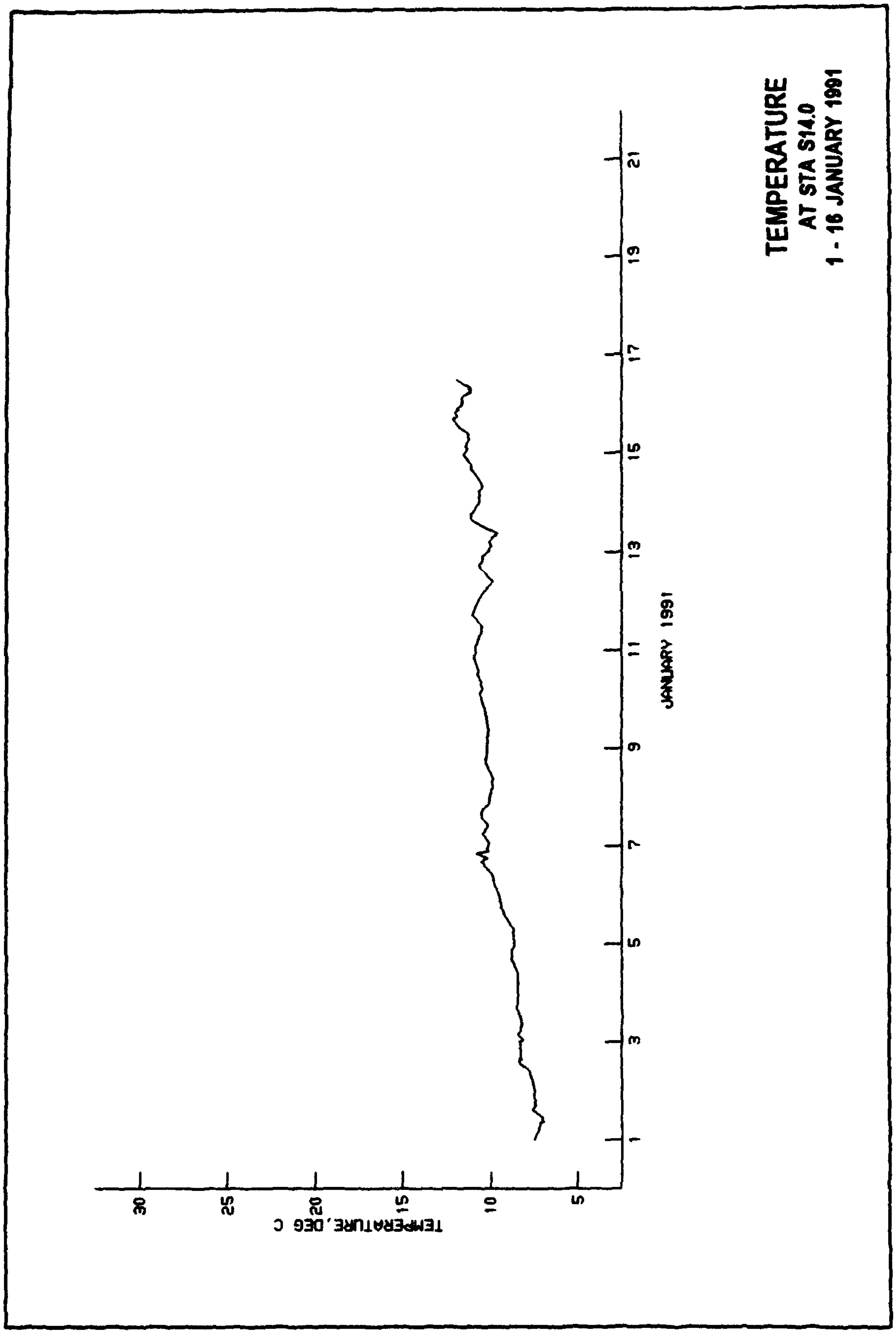
Plate 302



TEMPERATURE
AT STA S14.0
1 - 16 JANUARY 1991
TEMPERATURE, DEG C
5
10
15
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JANUARY 1991
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Appendix A
Estuarine Processes Branch Data Collection Equipment and Laboratory Analysis Procedures

This appendix provides detailed information on the types of data collection and laboratory equipment used in a majority of the field investigations performed by the Estuarine Processes Branch (EPB), Hydraulics Laboratory (HL), U.S. Army Engineer Waterways Experiment Station (WES). The following listing identifies the parameters most commonly measured and the types of instruments that can provide these measurements.

Current Velocity and Direction Measurements

Over-the-side current velocity and direction

Current velocity and direction measurements are obtained by deploying instruments over the side of a boat using a portable equipment setup shown in Figure A1. Collapsible aluminum frames are used to support the equipment, and winches are used to raise and lower the velocity and direction equipment with 1/8-in. wire rope. An indicator on the winch displays the depth of the instruments below the water surface. A Gurley Model 665 velocity meter with vertical-axis cup-type impeller and direct velocity read-out is used to measure the current speeds. These meters have a threshold speed of less than 0.2 fps and an accuracy of ±0.1 fps for velocities less than 1 fps and ±5 percent for velocities over 1 fps. Current directions are monitored with a magnetic directional indicator mounted above the velocity meter on a solid suspension bar. Accuracy of the direction indicators are ±10 deg at speeds greater than 0.5 fps; however, strong wave action moving the boat can cause temporary errors greater than this. This entire assembly is connected to a streamlined lead weight that holds the sensors in a vertical position and orients them into the direction of the flow. The signal cables from each instrument are raised and lowered with the equipment and connect to the display units located on the deck of the boat. A more detailed display of the system is shown in Figure A2.

Recording velocity meters

Self-contained recording current meters are used to obtain current velocity and direction measurements for both profiling and for long-term fixed-depth deployment. The two types of equipment commonly used are the Environmental Devices Corporation (ENDECO) Type 174 solid-state measurement (SSM) current meters as shown in Figure A3 and the InterOcean S-4 electromagnetic current meter shown in Figure A4.

The ENDECO 174 SSM meter is tethered to a stationary line or structure and floats in a horizontal position at the end of the tether (as shown in Figure A5). It measures current speed with a ducted impeller and current direction with an internal compass. The ENDECO 174 SSM also measures temperature with a thermilinear thermistor and conductivity with an induction

Figure A1. Field deployment of velocity measuring equipment

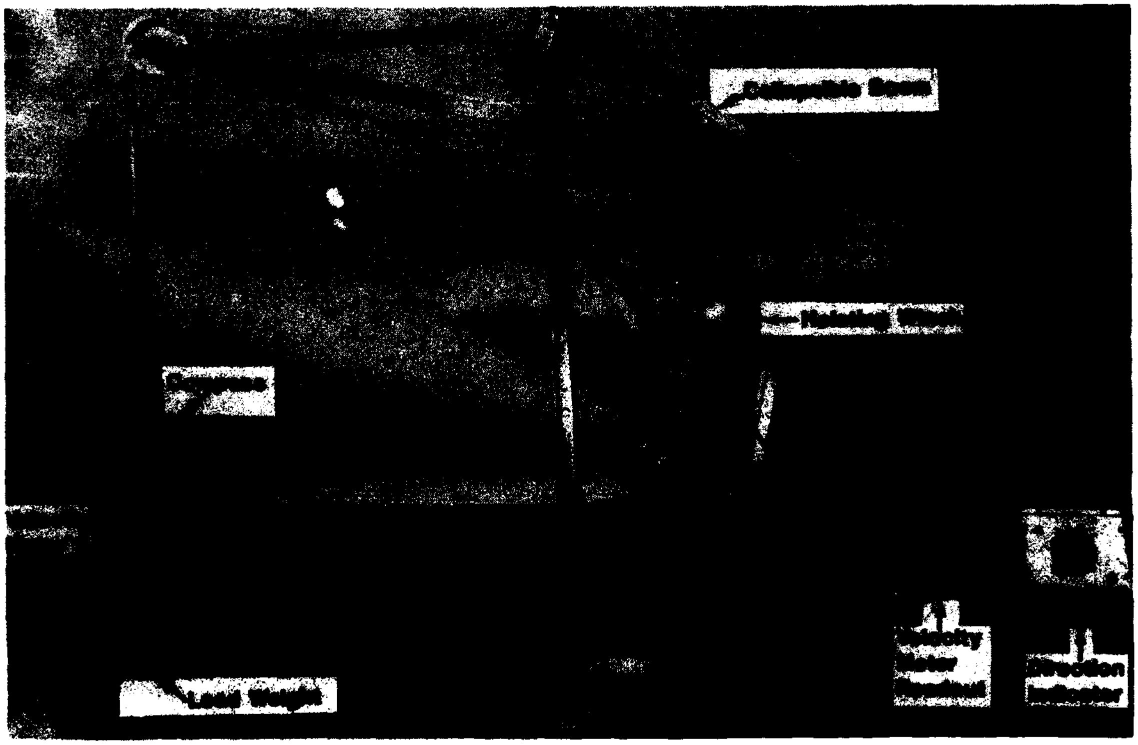


Figure A2. Components of the field instrument assembly

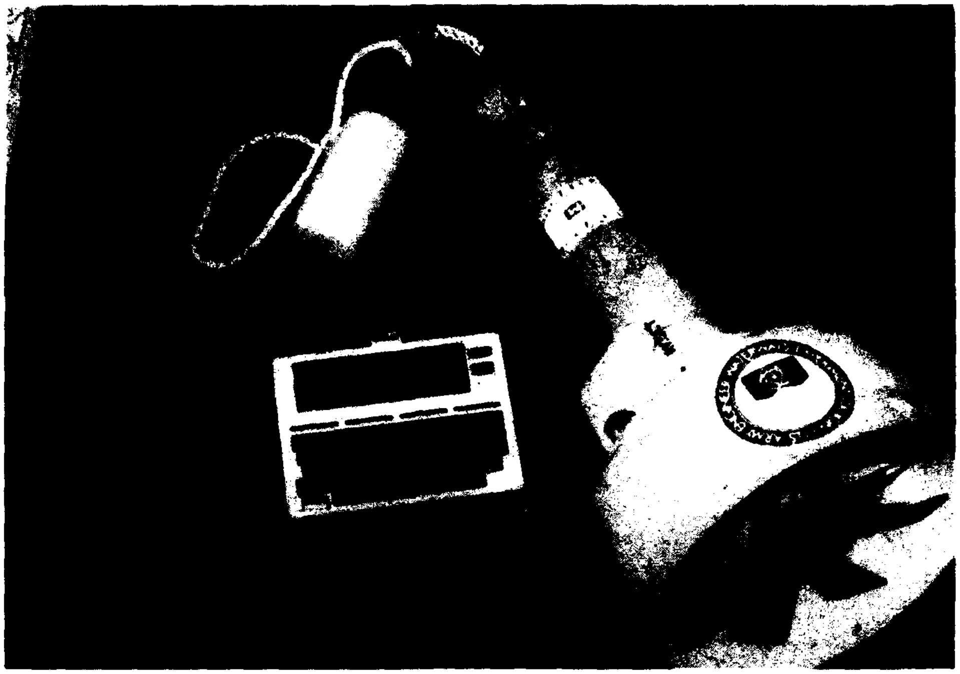


Figure A3. ENDECO 174 SSM recording current meter

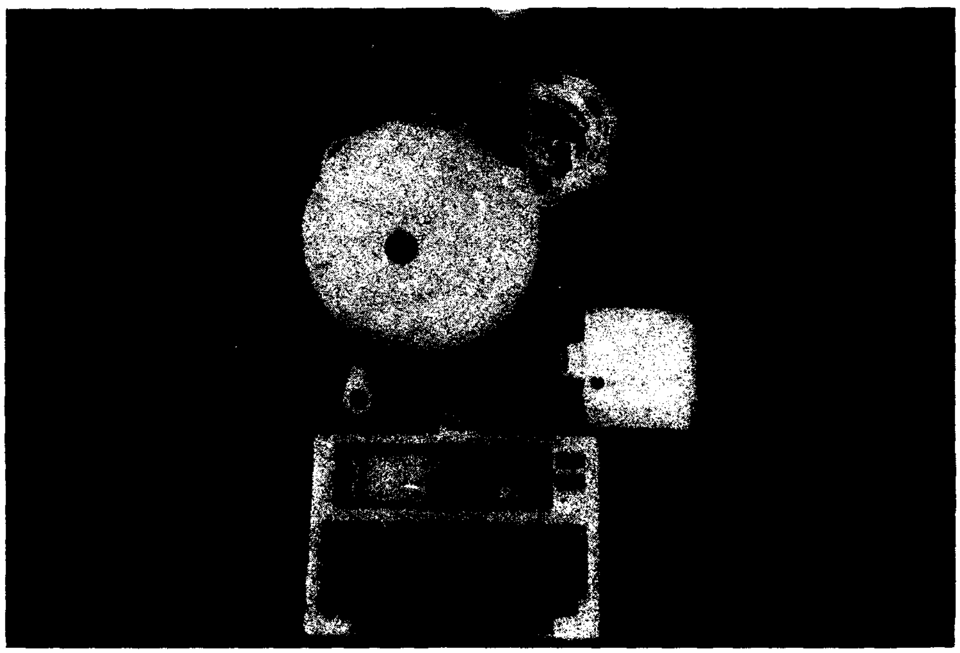


Figure A4. InterOceans S-4 current meter

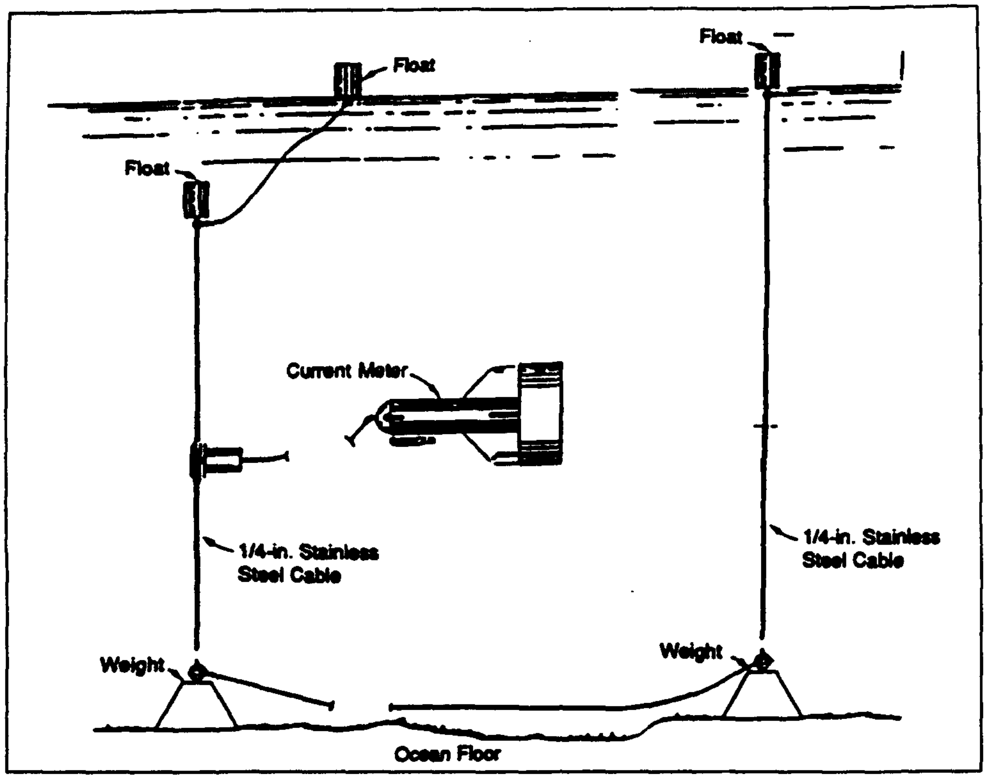


Figure A5. Typical deployment technique for fixed depth velocity measurements

type probe. Data are recorded on an internal solid state memory datalogger. Data are offloaded from the meter datalogger by a communication cable connected between the meter and a computer. The threshold speed is less than 0.08 fps, maximum speed of the unit used is 8.44 fps (10 knots), and stated speed accuracy is ±3 percent of full scale. The manufacturer states that direction accuracy is ±7.2 deg above 0.08 fps. Time accuracy is ±4 sec per day.

The InterOcean Model S-4 electromagnetic current meter can obtain continuous recording of current velocity and direction at fixed depths or can be used to profile the water column for current velocity and direction. The S-4 meter, shown in Figure A4, is a 10-in.-diam sphere that is suspended vertically in the water column with a submerged flotation device and anchored to the bottom by a heavy block and anchor arrangement. This deployment technique is illustrated in Figure A6. The S-4 meter measures the current velocity using an electromagnetic field to sense current induced by the movement of water through the field. An internal microprocessor coupled with an internal flux-gate compass computes the velocity vectors, which are then stored in the solid-state memory. The accuracy of the S-4 meter current speed is ±0.2 cm/sec.

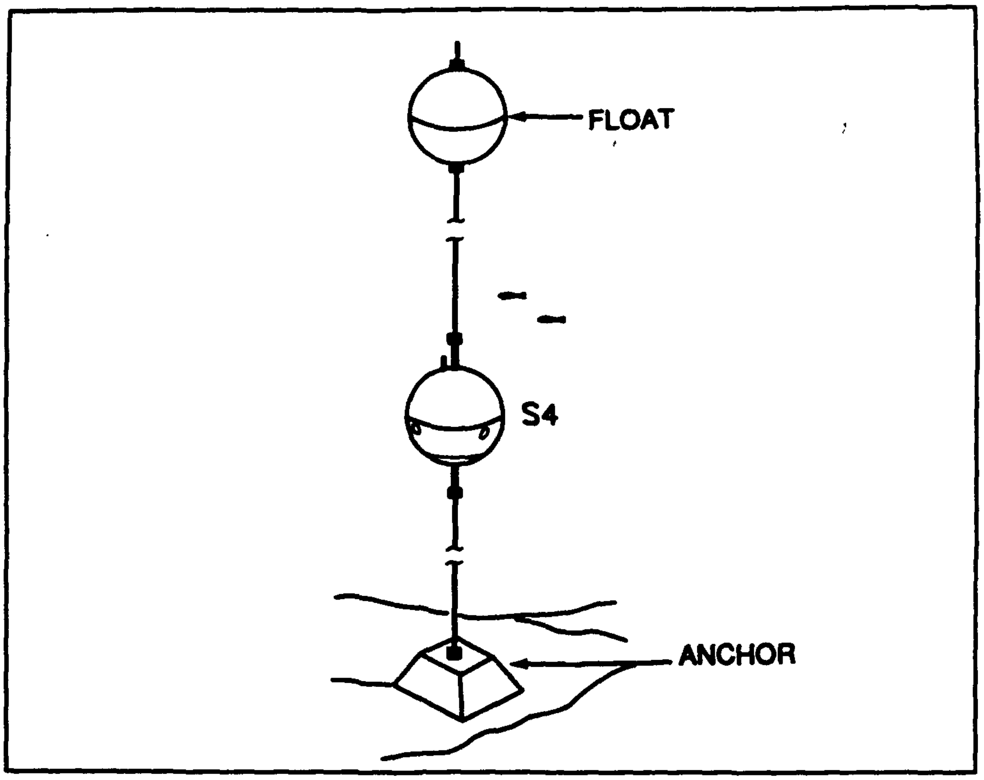


Figure A6. S-4 current meter deployment method

Suspended Sediment Samples

Pumped water samples

In combination with the over-the-side velocity measuring equipment, water samples for analyses of salinities and total suspended solids are obtained by pumping the sample from the desired depth to the surface collection point. The pumping system consists of a 1/4-in.-ID plastic tubing attached to the current meter signal cables for support. The opening of the sampling tubing is attached to the solid suspension bar at the same elevation as the current meter and is pointed into the flow. A 12-V d-c pump is used to pump the water through 50 ft of the tubing to the deck of the boat where each sample is then collected in individual 8-oz plastic bottles. The pump and tubing are flushed for approximately 1 min at each depth before collecting the sample.

Niskin sampler

The horizontal Niskin sampler, shown in Figure A7, is a hollow 3-in.-diam tube, 28 in. in length, with spring-loaded hinged caps on each end of the tube. The sampler is lowered, in a horizontal position, through the water column

Figure A7. Niskin samplers

with the ends of the sampler open. When the sampler reaches the desired depth, a messenger (a weighted object) is released along the cable to trigger the closure of the ends, trapping the desired volume of water within the sampler. It is then raised to the surface and the sample is removed and labeled. A small valve located on one end of the sampler is used to release the water sample. Multiple samples drained from the sampler at various times over a 4-hr period are used in the determination of settling velocities of suspended sediments within the sample. A log is maintained to include the sample number location, depth, time of sample removal, currents, and wave conditions. The samples are then placed in a rack for shipment back to the laboratory at WES for total suspended materials (TSM) and possibly salinity testing.

Automatic water samplers

The ISCO Model 2700 and American Sigma Model 700 automatic water samplers, shown in Figure A8, are employed to provide unattended sampling. A typical field installation of these water samplers is shown in Figure A9. Samples are collected in 1-ℓ plastic bottles located inside the sampler. The samplers are fully programmable, operating from a 12-V d-c power source, for obtaining any volume of sample desired up to the maximum size of the bottle, for obtaining composite samples, for setting different intervals between samples, and for setting times to begin the sampling routine. During servicing, the sample bottles are replaced with empty bottles to begin a new sampling period.

Figure A8. Automatic water samplers

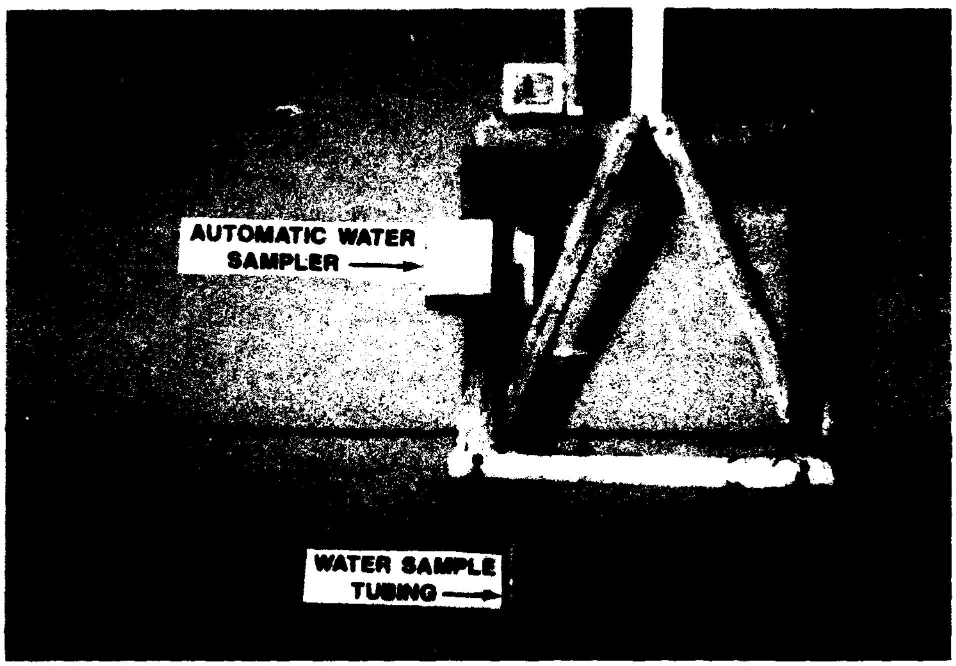


Figure A9. Typical field installation of the automatic water samplers

Water Level Measurements

Mechanical punch tape recorders

Water level measurements are made by a system consisting of a stilling well-contained float connected to a recording device by a wire rope. The recorders used are Fischer and Porter Company model 1550 punched tape mechanical water level recorders similar to the one shown in Figure A10. These instruments record elevations to the nearest 0.01 ft and have a range of up to 100 ft. A timer activates the recording mechanism every 15 min, and the float elevation at the time is punched on 16-channel, foil-backed paper tape. The float is a 3-in.-diam. aluminum cylinder, and the stilling well is a vertical 4-in.-diam polyvinyl chloride (PVC) pipe. A typical field installation is shown in Figure A11. Water in the stilling well responds to water levels outside the well by flow through a 15-ft-long, 3/8-in.-diam copper tube. The outer end of the tube is protected against clogging by a cylindrical copper filter.

The 15-ft-long copper tubing used as the stilling well filling port is designed to minimize short-period oscillations and to cause the well to respond linearly to fluctuations in the outside water level. Response characteristics of the stilling wells have been determined by drainage tests.[1] Initial synchronization of the tide recorder timer is within ± 5 sec of the National Bureau of Standards (NBS) time standard. The gage time is generally accurate to ± 2 min per month, except for occasional malfunctions that can cause large time errors. In practice, recorder and NBS times are recorded when tapes are removed so that timing errors can be identified. The relative accuracy of the water level recorders is affected by temperature of the water, float, and wire, plus salinity changes of the water inside the well. Relative accuracy is considered to be within 0.1 ft.

Electronic water level recorders

Water level measurements can also be recorded using solid-state electronic recorders, such as Microtide and ENDECO water level recorders.

The Microtide water level recorders, shown in Figure A11, contain a strain gage type pressure transducer in a subsurface case, which records the absolute pressure of the column of water above the case. The pressure transducer is not vented to the atmosphere; therefore, an extra unit is positioned in the study area to record atmospheric pressure changes. Water pressure is measured for the desired sample interval, and an average value is computed and stored on

[1] W. H. McAnally, Jr. (1979). "Water level measuring by Estuaries Division, Hydraulics Laboratory," Memorandum for Record, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

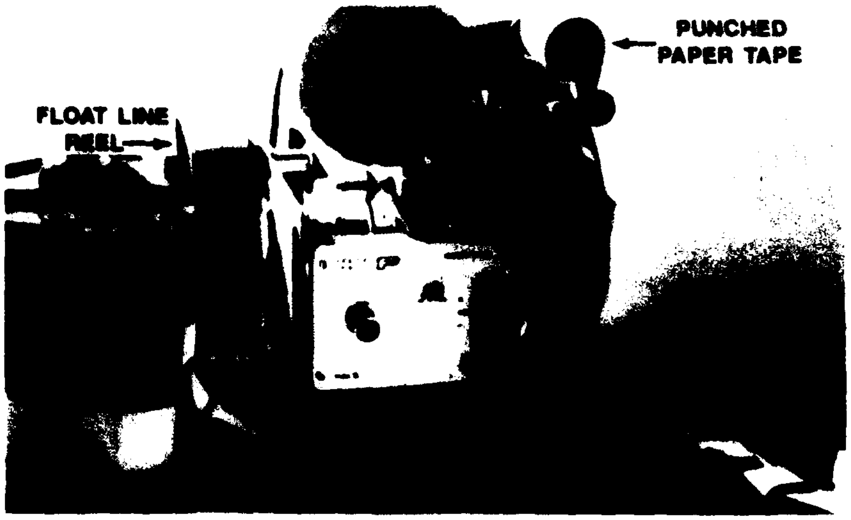


Figure A10. Punched paper mechanical water level recorders

Figure A11. Microtide electronic water level recorder

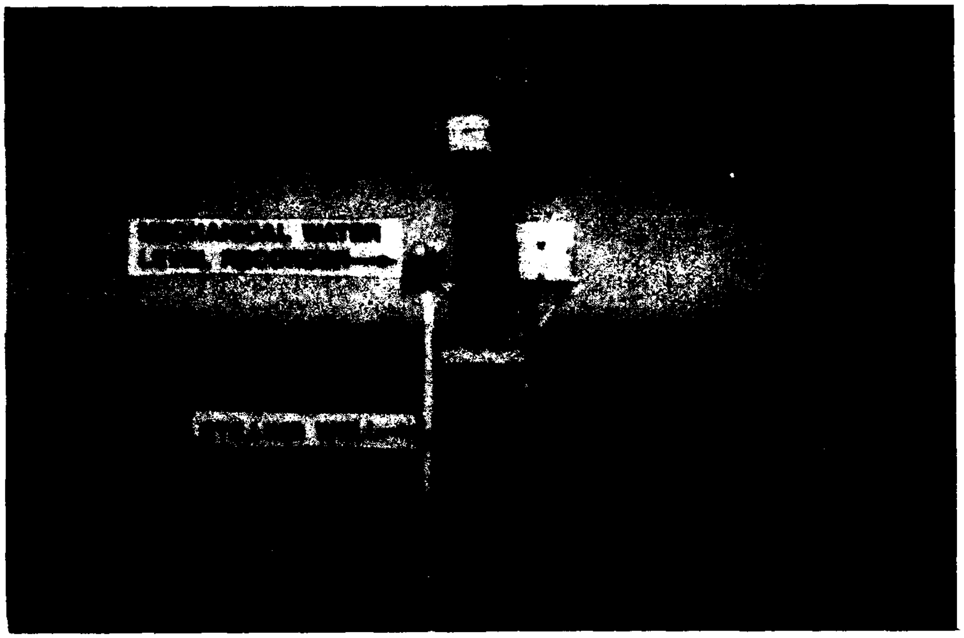


Figure A12. Typical field installation of mechanical water level recorders

the internal RAM data logger. The stated accuracy is ±0.02 ft. The sampling time interval can be set from 1 min to 24 hr. The Microtide also measures temperature by a YSI thermilinear thermistor built into the water level recorder. The thermistor has a range of -5 °C to +45 °C, with a stated accuracy of ±0.1 °C. The data from each recorder are stored on an accessible RAM located in the waterproof subsurface unit, which also contains the d-c power supply.

Water-level elevations, temperature, conductivity, and salinity measurements are recorded using ENDECO models 1152 and 1029 (water level and temperature only) SSM water level recorders shown in Figure A13. The ENDECO model 1152 SSM and 1029 SSM recorders contain a strain gauge type pressure transducer located in a subsurface case, which records the absolute pressure of the column of water above the case. The pressure transducer is vented to the atmosphere by a small tube in the signal cable to compensate for atmospheric pressure. The pressure is measured for 49 sec of each minute of the recording interval with a frequency of 5-55 kHz to filter out surface waves, therefore eliminating the need for a stilling well. The accuracy is ±0.05 ft. The sampling time interval can be set from 1 min to 1 hr. The 1152 SSM and 1029 SSM also measure temperatures by a thermilinear thermistor built into the recorders. The thermistor has a range of -5 °C to +45 °C, with an accuracy of ±0.2 °C. The 1152 SSM measures conductivity by an inductively coupled probe installed on the meter. These measurements and the measurements of temperature are used to calculate water salinity in units of parts per thousand (ppt) with an accuracy of ±0.2 ppt.

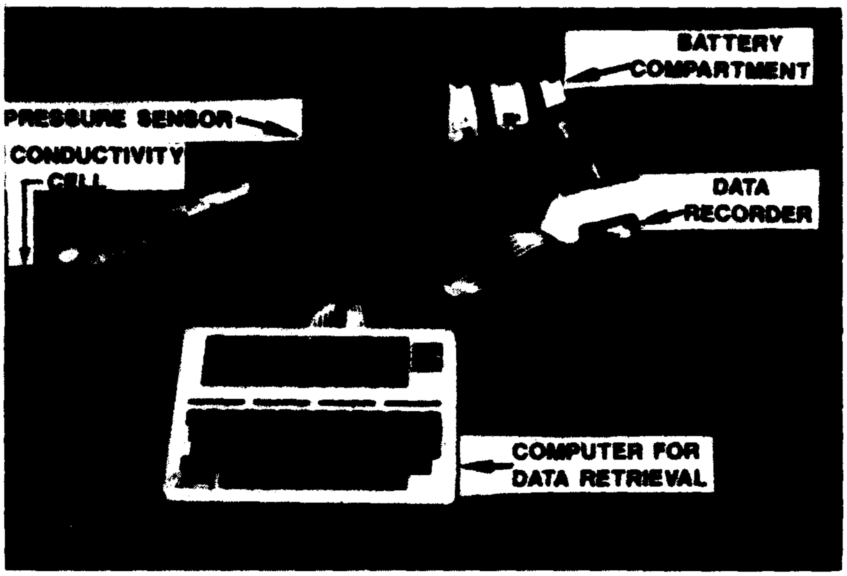


Figure A13. Water level recorder

The sampling time interval for conductivity and temperature cannot be set independently from the water level measurements. The data from each recorder is stored on a removable EPROM solid-state memory cartridge located in a waterproof surface unit that also contains the d-c power supply.

Salinity Measurements

Aanderaa salinity recorder

The Aanderaa RCM4 salinity recorder, shown in Figure A14, provides conductivity and temperature measurements required to calculate water salinity at a fixed depth. The recorder housing is an aluminum alloy case with anodized external conductivity cell and temperature sensors to minimize corrosion. The recorder has a range of 0 to 40 ppt with an accuracy of $\pm$0.2 ppt. The data are recorded on a 1/4-in. magnetic tape in 10-bit binary word serial format. The data sampling intervals range from 1 to 180 min with an accuracy of $\pm$0.5 sec/day. The magnetic reels are removed from the recorders and returned to WES for processing using a tape reader.

The Seabird Seacat Profiler SBE19, shown in Figure A15, provides conductivity and temperature measurements to calculate the water salinity. This sensor can be used in a stationary position to obtain salinity data at a fixed depth or can be used in a profiling mode for measuring salinities through the water column. The recorder housing is constructed of a rugged plastic with an internal field glass conductivity cell with platinum electrodes, a pressure protected thermistor temperature sensor, and zinc anodes to retard corrosion. Pressure or depth can be acquired if the recorder is outfitted with a mechanical strain

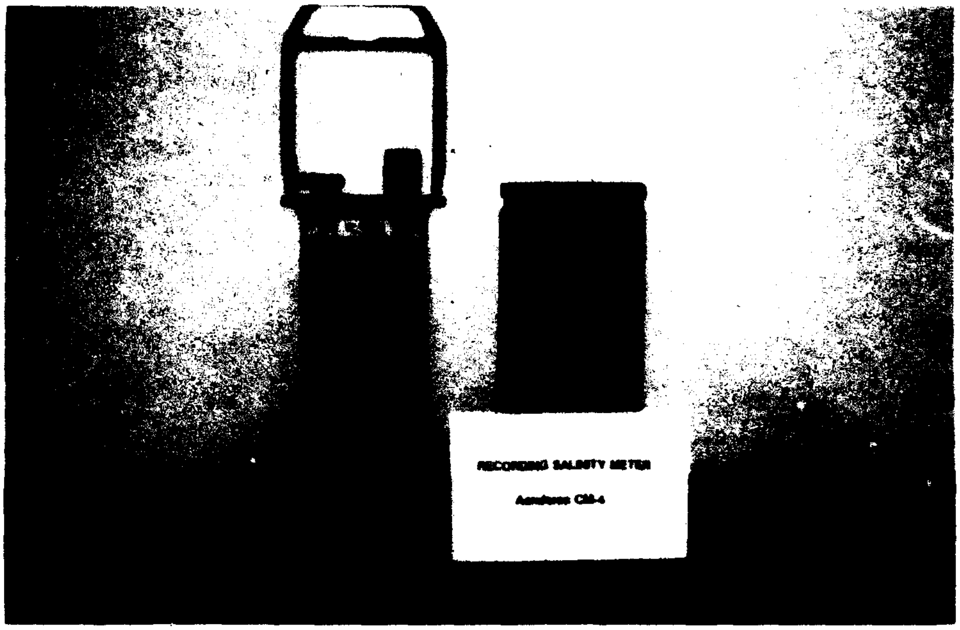


Figure A14. Aanderaa salinity recorder

Figure A15. SeaBird Seacat Profiler

gauge pressure sensor. The conductivity sensor has a range of 0-7 S/m with an accuracy of ±0.007 S/m. The temperature sensor has a range of -5 to 35 °C with an accuracy of ±0.4 °C. Pressure depth accuracy depends upon the range of the cell installed on the recorder. The recorder contains an internal 64K bytes of CMOS static RAM. The data sampling can be as fast as every 0.5 sec. The data are downloaded to an external computer via a standard RS-232 interface. The recorder receives power from 6 D size alkaline batteries which are capable of operating up to 30 hr of continuous recording at 0.5 sec/sample.

Bottom Sediment Sampling

Push core sampler

Bottom sediments are obtained using a push core type sampler. The sampler consists of a 1-1/2-in.-diam PVC pipe, 18 in. in length. Attached to this is a smaller section of pipe with a valve attached at the upper end. The purpose of the valve is to create a reduced pressure holding the sample in the larger diameter pipe. The samples are then brought to the surface and classified by visual inspection or transported back to WES for more detailed analysis.

BM-54 bottom sampler

The U.S. Geological Survey (USGS) BM-54 sampler, shown in Figures A16 and A17, is a 100-lb sampler used to collect samples from the bed of a stream, reservoir, or estuary of any depth. The sampler is made of cast iron, 22 in. long, equipped with tail fins and a spring-loaded scoop-type sampling bucket located on the bottom of the sampler. The sampler is supported by a steel cable from a portable winch and boom system. The scooping sampling bucket is cocked and spring loaded in the open position while being supported by the steel cable and winch. When the sampler touches the bottom, the tension on the cable is released and the bucket snaps shut, taking the sample. The sampie is collected from the top 2 in. of the bottom material. The bucket surrounds the sample and prevents it from being washed out as it is raised to the surface.

Meteorological Measurements

Hand-held wind speed and direction indicators

Wind speeds are recorded using a WeatherMaster Model No. 132 hand-held anemometer. The anemometer is oriented into the direction of the prevailing wind, and the maximum reading on the analog scale is observed and

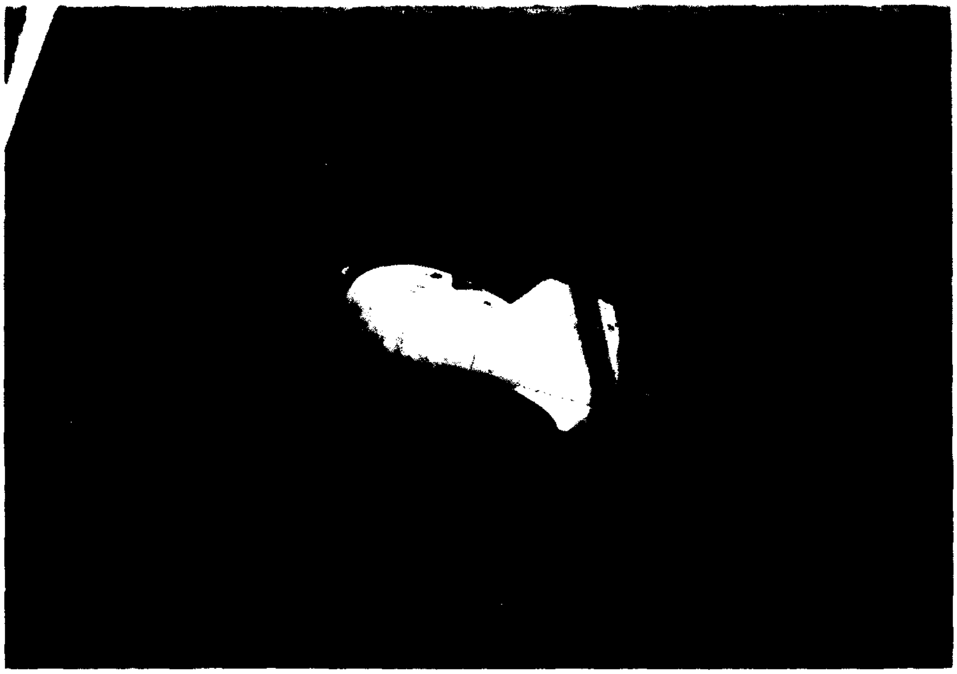


Figure A16. Bed material sampler USGS BM-54 being deployed from boat

Figure A17. Bed-material sampler, USGS BM-54

recorded. The directions of the prevailing winds are determined from the compass heading of the anemometer giving the highest speed indication.

Digital data recording station

Continuous wind speed and direction measurements are recorded using a HANDAR Model No. 540-A data acquisition system (Figure A18). The data collection platform is typically located at some central location in the study area and mounted approximately 10 m above the water. The data acquisition system is a battery-powered microcomputer with a real-time clock, a serial data interface, and programmable analog to digital converter. The battery is constantly charged using a solar panel charging system located near the system. Various programming options are available for setting the sampling interval of the system for the input signals from the wind speed and direction sensors. The system can be programmed to sample the input signals each second over a set period of time to determine the mean wind speed, mean direction, maximum wind gust speed, and maximum wind gust direction. The data are processed internally and stored in formats specified in a user-entered output table. The accuracy of the analog input of the wind speed and direction sensors are $\pm$1.0 mph and $\pm$3.0 deg, respectively.

Laboratory Equipment and Sample Analysis

Laboratory analysis for salinities

An AGE Instruments Incorporated Model 2100 MINISAL salinometer (Figure A19) with automatic temperature compensation is used for the determination of salinity concentrations in the individual samples. The salinometer is a fully automated system, calibrated with standard seawater, and the stated manufacturer's accuracy is $\pm$0.003 ppt on samples ranging from 2 to 42 ppt.

Laboratory analysis for total suspended materials

Total suspended materials are determined by filtration of samples. Nuclepore polycarbonate filters with 0.40 μm pore size are used. They are desiccated and preweighed; then a vacuum system (8-lb vacuum maximum) is used to draw the sample through the filter. After the filters and holders are washed with distilled water, the filters are dried at 105 °C for 1 hr and reweighed. The TSM is calculated based on the weight of the filter and the volume of the filtered sample.

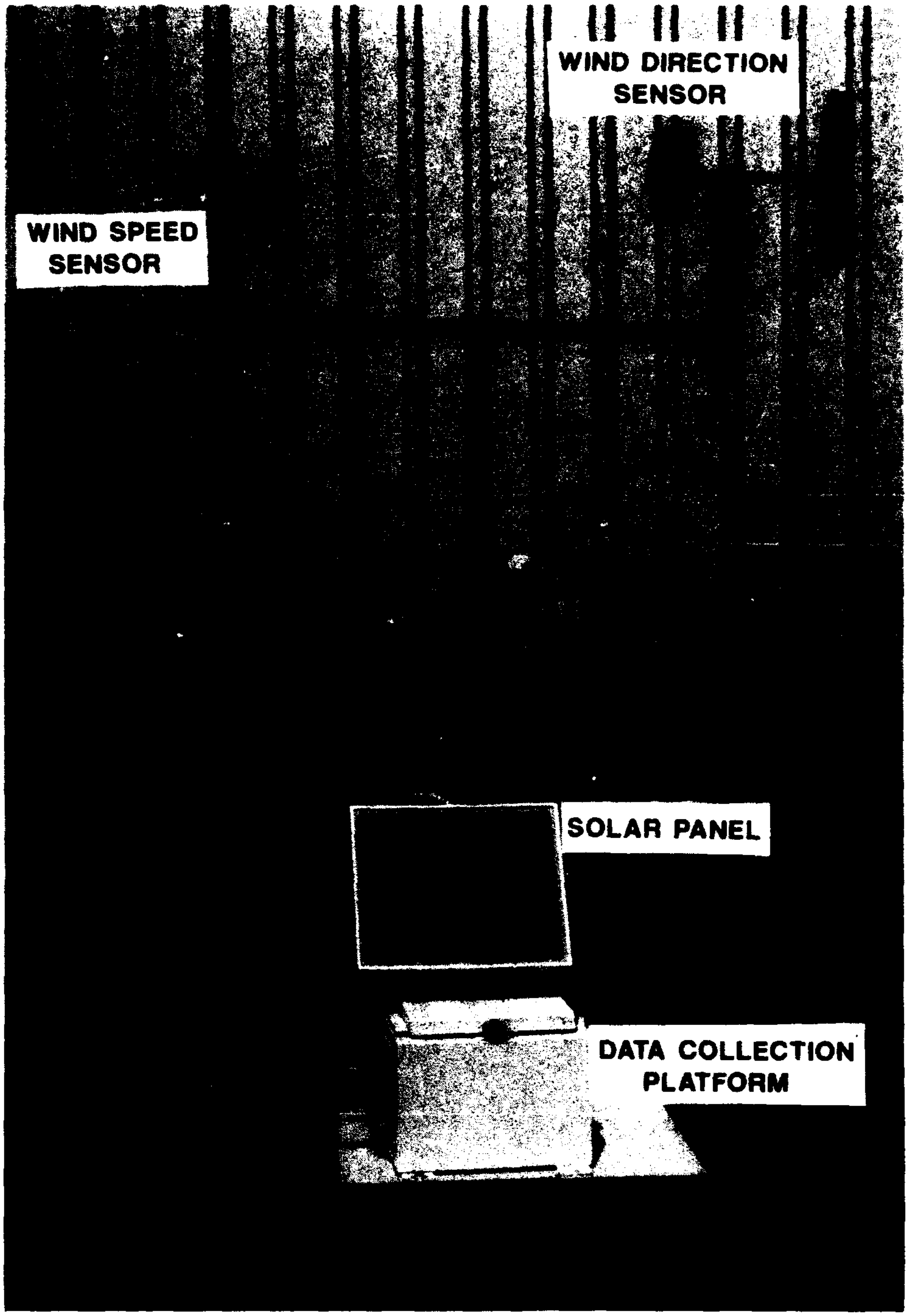


Figure A18. HANDAR meteorological data acquisition system

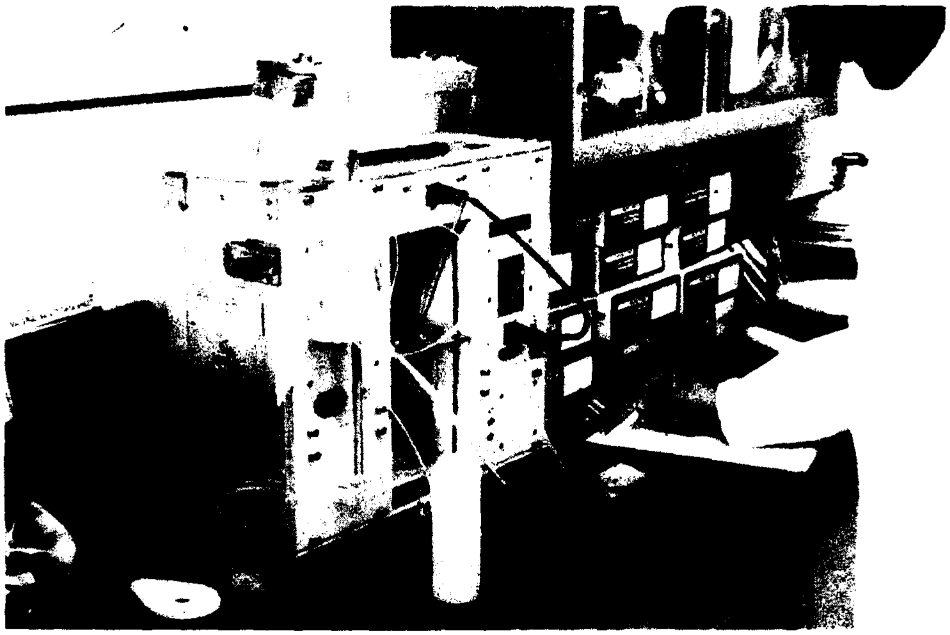


Figure A19. AGE MINISAL salinometer

Density analysis

A density analysis is done using wide-mouth, 25-cm constant-volume pycnometers. They are calibrated for tare weight and volume. A pycnometer is partially filled with sediment and weighed, then topped off with distilled water. Care is taken to remove any bubbles before the pycnometer is reweighed. The bulk specific gravity (BSG) of the sediment is then calculated by the equation:

$$BSG = \frac{(p)\ (sed\ wt - tare\ wt)}{(p)\ (vol\ pyc) + (sed\ wt) - (sed + water\ wt)}$$

where

p = density of water at temperature of analysis
sed wt = weight of pycnometer with sediment
tare wt = tare weight of pycnometer
vol pyc = volume of pycnometer
sed + water wt = weight of pycnometer with sediment and water

Appendix B
Estuarine Boundary Layer Instrumentation System (EBIS)

This appendix provides detailed information on the Estuarine Boundary Layer Instrumentation System (EBIS) used during the Galveston Bay field investigation. Also included in the appendix are the data obtained from the system and a summary of the results concluded from the data analysis.

The Purpose and Aim of the EBIS Deployment

The Galveston study is a multitask effort for field data collection in the Galveston Bay. The data will be used in verifying a multidimensional hydrodynamic numerical model that displays the present conditions of the bay. One of the primary concerns of this field study is to determine the effects on salinity of widening and deepening the Houston-Galveston Ship Channel.

Local ship traffic causes a vertical mixing of the more dense saline waters in the channel with the less dense fresh water at the water surface. The saline water then propagates away from the moving ship and into the shallow flats adjacent to the channel. A concern is that this increased salinity raises the salinity in the near-bottom areas of the oyster beds.

The EBIS is a computerized instrument used to obtain short- or long-term data sets in the near-bed boundary layer. The instrument was used to monitor the effects of ship passages on the hydrodynamics in areas adjacent to the main navigation channel. The parameters measured included bed shear stress, shear flow, suspended solids concentrations, salinity, and water level fluctuations. The data obtained by the system will help quantify the many changes that are occurring.

Equipment Description

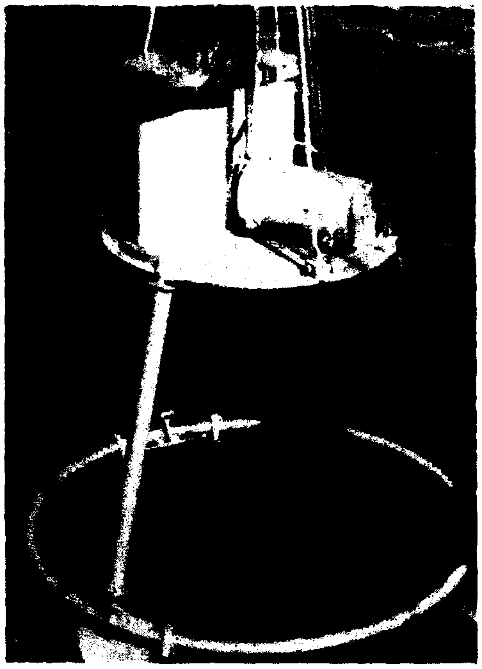


Figure B1. Deployment of EBIS at sampling location

The EBIS is an instrument that provides a means of profiling the water column, including the low-density sediment layer in the near-bed environment. The instrument is capable of monitoring flow velocity, water depth, temperature, conductivity, and turbidity. The array of instruments is attached to a motorized ram or T-bar for raising and lowering through the near-bed sediment layer. Figure B1 shows the system being deployed.

Inclinometers are mounted on the support frame of the instrument to measure the tilt of the entire system for determination of the proper operating position during deployment procedures. Turbidity is measured using an optical backscatter sensing probe that measures the amount of light reflected from the suspended sediments in the water column. Plates mounted on the bottom of the profiling T-bar detect hard bottom and halt downward movement of the bar.

The instrument contains an on-board data acquisition system. The data logging capabilities include 11 analog input channels and unlimited digital channels. The system currently has 1 megabyte of internal memory with expansion capabilities of up to 20 megabytes by addition of a hard drive.

Initial Deployment (July 17-20 1990)

The deployment site chosen was located on the west side of the Houston Ship Channel near channel marker 50. On July 17, the EBIS was loaded aboard the research vessel *LoneStar* for transport to the deployment site. The EBIS was lowered to the bottom at the site, and the communication line was connected to the on-board computer for a check for the inclinometer output to ensure a vertical deployment. The location of the EBIS was marked by tethering a U.S. Coast Guard submerged obstruction buoy to prevent damage to the system from shrimp boats and other small boats. Following deployment, vertical salinity profiles were taken in the channel and at the deployment site using an S4 InterOcean solid-state profiling instrument. The S4 is used primarily as an electromagnetic current meter for measurement of speed and direction of currents but also contains sensors for measuring temperature and conductivity.

A vertical stratification of 10 ppt from the bottom to the surface was found in the channel. The water depth at the deployment site was approximately 10 ft. The bottom material was sampled and determined to consist predominantly of hard-packed clay with some fine sands.

The instrument array of the EBIS was positioned approximately 1 in. above the bed, and the microprocessor was programmed to store data at 3-sec intervals and compute an average every 30 sec. The communication cable was then disconnected from the computer, weatherproofed, and attached to the navigation buoy for easy retrieval the following day.

On 18 July, a severe weather front with high winds and lightning passed through the Galveston Bay area and delayed a return trip to the equipment deployment site. At the existing sampling rate, the microprocessor could store in memory all the data taken; however, there was some concern about the quantity of battery power being sufficient to operate the system without recharging. On 19 July, the weather had cleared the area and a return trip to the deployment site was performed. The communication cable was retrieved and connected to the on-board computer. It became immediately apparent that the tripod was no longer in the upright position. A review of the data revealed that the EBIS had been tipped over on its side after the first 8 hr of data collection. The EBIS was retrieved and brought on board the boat. The data were downloaded and the battery voltage checked for proper levels.

The EBIS was later redeployed with the profiling T-bar lowered to the bottom. The system was programmed to obtain a 10-sample average every 5 sec in the fixed position mode but was not left unattended during this redeployment. Again, vertical profiles were obtained at hourly intervals using the S4 meter. During this deployment, all ship passages near the deployment site were recorded for size of ship and heading. It was observed that during the daylight hours, the majority of traffic consisted of barge traffic. After dark, it appeared that the large-ship traffic increased. As the large ships passed the site, a maximum drawdown of 2 ft was observed by the EBIS depth sensor followed a very dramatic surge. These surges made it very difficult to hold the boat in position. The EBIS was retrieved at this point for safety of equipment and personnel and readied for redeployment the next morning. Following retrieval of the equipment, the batteries were recharged to bring them up to full power levels.

The following morning, 20 July, the EBIS was redeployed. A new sampling program was initiated at this time in which the instruments would profile to a height of 36 in. above the bottom. Ten-sample averages were obtained every 2 in. of the profiled height. Additional profiles were obtained with the S4 meter and all ship passages were recorded. The EBIS was retrieved at the end of the day, concluding the initial deployment period.

Final EBIS Deployment (22-23 October 1990)

At the midpoint of the long-term field data collection period the final deployment of the EBIS was performed. The deployment site location remained the same as described earlier. The EBIS was deployed on the morning of 22 October 1990, with the instrument array set at a fixed position (non-profiling) near the bottom. The microprocessor was programmed to obtain a 10-sample average every 5 sec and store the information in memory. Simultaneous background profiles of salinities were obtained using a *Seabird SBE-19 CTD* (Appendix A), the S4 meter was deployed to collect data at a fixed position, and ship passages were again recorded. The boat remained onsite and connected with the EBIS via the communication cable.

The following morning, 23 October, the instrument array was placed into a profiling mode that traversed a vertical distance above the bed to a height of 36 in. A ten-sample average was obtained every 3 in. throughout the profile. At this sampling frequency, the system completed a profile every 8 min. The system obtained data in this setup over a 4-hr period.

Data Presentation

The EBIS employed several different sampling routines during the July deployment so that ship traffic effects could best be determined. One sampling routine moved the instruments continuously in a vertical profiling mode. The intent of this method was to measure changes in the vertical profile. A second routine used sampling on 5-sec intervals with the instrument array held on the bottom. This proved to be the best method of sampling. Since the vessel effects were short-lived, shorter than the 8-min profiling cycle, the fixed position sampling enabled the change at the boundary to be measured. In addition to this fixed position EBIS sampling, a Seabird SEB-19 conductivity, temperature, and depth (CTD) sensor was used to profile the channel and shallows before, during, and after vessel passage.

Data shown in Plate B1 were taken by the EBIS system running in a fixed position near the bottom. The vertical lines in Plate B1, numbered 1-17, represent event markers identifying vessels transiting the channel near the EBIS deployment site. Table B1 is a listing of event marker identification number and type of vessel. The time-history plot of salinity for each ship passage indicated a rise in salinity for a brief time period before returning to background levels. The maximum change due to ship traffic was 3 ppt, and this increase lasted only a few minutes before it returned to background conditions. If several ships or even barges were to move in the same direction past the sampling position, the time required for the salinities and temperatures to return to background conditions could possibly be longer, but it was still not greater than 10-15 min.

The second deployment effort was conducted in October during a low freshwater inflow period. The site location and procedures were the same. The vertical stratification was significantly less than the previous deployment. The stratification in the channel, from the surface to the bottom, was approximately 3.5 ppt. Background salinity and temperature conditions are listed in Table B2 and are plotted in Plates B2 and B3.

Salinity and temperature profiles were take using the Seabird CTD sensor on the site of the channel near the EBIS deployment location. The profiles were obtained before, during, and after vessel passage. The background data are listed in Tables B3-B6. Plates B4 - B11 are the time-history plots of salinity and temperature profiles for a period before, during, and after a ship passage.

Summary

The following summary is based only on the inspection of the data that has been presented. The data show that vessel traffic pushes salty water out of the channel and draws fresher water back in, leaving the salinity at about the level it was to begin with. That is a mixing process that is making the channel somewhat fresher and the adjacent bay somewhat saltier. It suggests that a single vessel-induced exchange is a mixing mechanism that changes the ambient salinity by only a small amount, but the aggregate of many passages may be a significant part of the mixing that establishes the ambient salinity.

Thus the data support the following conclusions:

a. Single-vessel passages cause an exchange of saltier water from the channel and fresher water from the adjacent bay at marker 50.

b. A single-vessel passage does not appear to create a discernible change in salinity at the measurement site.

c. More detailed analysis, including reconstruction of the data, is needed to quantify the exchange and will be performed later.

Table B1
Ship Traffic During Test, Test 6, 07/19/90

Event Marker No.	Time CST	Event
1	3:38:00 PM	Tanker, approximately 600 ft long and empty, passed CM50 headed outbound
	3:58:00 PM	Two-barge tow passed CM50 headed outbound
2	3:59:00 PM	Three-barge tow passed CM50 headed inbound
	4:49:00 PM	One barge passed CM50 headed inbound
3	4:56:00 PM	One tanker passed CM50 headed inbound fully loaded
4	5:31:30 PM	Two-barge tow passed CM50 headed inbound
5	5:33:45 PM	Two-barge tow passed CM50 headed inbound
6	6:00:00 PM	Tanker, fully loaded, passed CM50 headed inbound
7	6:09:00 PM	Tanker, fully loaded, passed CM50 outbound
8	6:14:00 PM	Empty tanker, approximately 600 ft long, passed CM50 headed in bound
	6:19:00 PM	45-ft pleasure craft passed CM50 inbound
	6:20:00 PM	Lone tugboat passed CM50 headed inbound
9	6:45:00 PM	Empty tanker passed CM50 headed outbound
10	6:52:00 PM	One-barge tow passed CM50 headed inbound
	6:55:00 PM	Two-barge tow passed CM50 headed outbound
	7:03:00 PM	One-barge tow passed CM50 headed inbound
11	7:15:00 PM	One-barge tow passed CM50 headed inbound
12	7:17:00 PM	Lone tugboat passed CM50 headed inbound
13	7:24:00 PM	Two-barge tow passed CM50 headed inbound
14	7:43:00 PM	One-barge tow passed CM50 headed inbound
15	7:56:00 PM	One-barge tow passed CM50 headed outbound
16	8:07:00 PM	One-barge tow passed CM50 headed inbound
	8:08:00 PM	One-barge tow passed CM50 headed outbound
17	8:15:00 PM	Tanker, approximately 600 ft long, passed CM50 headed outbound
	8:20:00 PM	Tanker, approximately 600 ft long, passed CM50 headed inbound
	8:23:00 PM	Tanker, approximately 600 ft long, passed CM50 headed outbound

Table B2
SeaBird Background Profile 6

Decibars	Temperature °C	Salinity ppt
2.09	20.8	19.9
2.56	20.9	20.0
3.79	21.0	20.1
5.01	21.1	20.5
6.46	21.2	21.2
7.92	21.5	21.7
9.18	21.7	22.0
9.46	21.8	22.0
9.99	21.9	22.1
9.86	22.0	22.2
9.67	22.0	22.2
9.61	21.9	22.2
9.65	21.9	22.2
9.76	21.9	22.1
9.75	22.0	22.1
9.75	22.0	22.3
9.72	22.0	22.4
9.70	22.0	22.4
9.63	22.0	22.3
9.75	22.0	22.3
9.81	22.0	22.4
9.93	22.0	22.4
10.30	22.1	22.6
11.01	22.1	22.8
12.04	22.2	23.2
12.98	22.4	23.4
13.42	22.6	23.5
13.33	22.6	23.5
12.95	22.6	23.5
12.57	22.6	23.5
12.20	22.5	23.5
11.93	22.4	23.3

(Sheet 1 of 3)

Table B2 (Continued)		
Decibars	Temperature °C	Salinity ppt
11.58	22.3	23.1
11.31	22.3	23.0
11.12	22.3	22.9
10.77	22.2	22.8
10.76	22.2	22.8
10.59	22.2	22.8
10.39	22.2	22.8
10.19	22.2	22.8
10.04	22.2	22.7
9.57	22.1	22.6
9.33	22.1	22.6
9.06	22.0	22.4
8.63	22.0	22.3
8.46	21.9	22.2
8.17	21.9	22.2
7.92	21.9	22.1
7.67	21.8	22.0
7.37	21.7	21.8
7.07	21.7	21.7
6.82	21.6	21.6
6.56	21.5	21.4
6.28	21.4	21.2
6.05	21.3	21.0
5.69	21.2	20.8
5.35	21.2	20.8
5.14	21.2	20.7
4.75	21.2	20.6
4.44	21.1	20.5
4.14	21.1	20.4
3.85	21.0	20.3
3.55	20.9	20.2
3.30	20.9	20.2
2.91	20.9	20.2

(Sheet 2 of 3)

Table B2 (Concluded)		
Decibars	Temp °C	Salinity ppt
2.62	20.9	20.1
2.48	20.9	20.0
2.21	20.8	20.0
1.84	20.8	19.9
1.53	20.9	19.9
1.24	20.9	17.9

(Sheet 3 of 3)

Table B3 SeaBird Background Profile 27		
Decibars	Temperature °C	Salinity ppt
1.11	19.4	19.6
1.30	20.3	20.8
1.38	20.6	20.7
1.25	20.7	20.8
1.52	20.7	20.8
1.53	20.7	20.8
1.67	20.7	20.8
1.91	20.7	20.8
1.83	20.7	20.8
2.10	20.7	20.8
2.16	20.7	20.8
2.22	20.7	20.9
2.48	20.8	20.9
2.54	20.8	20.8
2.79	20.8	20.9
3.08	20.8	20.9
3.43	20.8	20.9
3.66	20.8	20.8
3.84	20.8	20.8
3.87	20.8	20.8
3.94	20.8	20.9
4.02	20.8	20.9
4.04	20.8	21.0
4.13	20.8	21.0
4.17	20.8	21.0
4.24	20.8	21.0
4.29	20.8	21.0
4.37	20.8	21.0

Table B4
SeaBird Background Profile 28

Decibars	Temperature °C	Salinity ppt
1.19	20.1	19.7
1.21	20.3	20.9
1.46	20.4	20.9
1.43	20.4	20.9
1.71	20.4	20.9
1.88	20.4	20.8
1.94	20.4	20.9
2.12	20.4	20.9
2.14	20.4	20.9
2.31	20.5	20.9
2.38	20.5	21.0
2.57	20.5	21.0
2.67	20.5	21.0
2.99	20.5	21.0
3.09	20.5	21.0
3.35	20.5	21.1
3.65	20.5	21.0
3.71	20.5	21.0
3.87	20.5	21.0
3.80	20.5	21.0
3.83	20.5	21.0
3.74	20.5	21.1
3.49	20.5	21.1
3.44	20.5	21.1
3.29	20.5	21.1
3.06	20.5	21.1
2.96	20.5	21.1
2.90	20.5	21.1
2.78	20.5	21.0
2.64	20.5	21.1
2.50	20.5	21.1
2.31	20.5	21.0

(Continued)

Table B4 (Concluded)		
Decibars	Temperature °C	Salinity ppt
2.25	20.5	21.1
1.92	20.4	21.1
1.92	20.4	21.1
1.66	20.4	21.1
1.50	20.4	21.1
1.54	20.4	21.1
1.27	20.4	15.4
1.27	20.4	19.2

Table B5
SeaBird Background Profile 29

Decibars	Temperature °C	Salinity ppt
1.08	19.6	19.9
1.23	19.8	19.8
1.31	19.8	19.8
1.46	19.9	19.8
1.52	19.9	19.8
1.59	19.9	19.8
1.76	19.9	19.8
1.85	19.9	19.8
2.02	19.9	19.9
2.18	19.9	19.8
2.27	20.0	19.8
2.39	20.0	20.1
2.61	20.0	20.3
2.76	20.1	20.1
2.93	20.2	20.5
3.18	20.3	20.6
3.34	20.3	20.5
3.49	20.3	20.7
3.89	20.3	20.9
4.09	20.4	20.9
4.13	20.4	20.8
4.13	20.4	20.8
4.03	20.4	20.8
3.92	20.4	20.8
3.73	20.4	20.9
3.57	20.4	20.9
3.37	20.4	20.9
3.18	20.3	20.9
2.98	20.3	20.8
2.71	20.2	20.5
2.53	20.1	20.4
2.37	20.0	20.3

(Continued)

Table B5 (Concluded)		
Decibars	Temperature °C	Salinity ppt
2.22	19.9	20.1
2.00	19.9	20.1
1.75	19.9	20.1
1.47	19.9	20.1
1.22	19.9	20.0

Table B6
SeaBird Background Profile 30

Decibars	Temperature °C	Salinity ppt
1.08	19.3	16.4
1.24	19.7	18.9
1.30	19.8	20.1
1.38	19.9	20.1
1.57	19.9	20.1
1.60	19.9	20.1
1.75	19.9	20.1
1.98	19.9	20.1
2.10	19.9	20.1
2.18	19.9	20.0
2.31	19.9	20.1
2.45	20.0	20.1
2.60	20.0	20.2
2.81	20.0	20.3
3.04	20.1	20.5
3.31	20.2	20.6
3.49	20.2	20.5
3.71	20.3	20.7
3.91	20.3	20.7
3.96	20.3	20.6
3.97	20.3	20.6
3.95	20.3	20.6
3.98	20.3	20.6
3.98	20.3	20.6
3.95	20.4	20.6
3.96	20.4	20.7
3.95	20.4	20.7
3.95	20.4	20.8
3.96	20.4	20.9
3.95	20.4	20.9
3.93	20.4	20.9
3.89	20.4	20.9

(Continued)

Table B6 (Concluded)

Decibars	Temperature °C	Salinity ppt
3.88	20.4	21.0
3.86	20.4	21.0
3.84	20.4	21.0
3.82	20.4	21.0
3.82	20.4	21.0
3.82	20.4	21.0
3.81	20.4	20.9
3.82	20.4	20.9
3.82	20.4	20.9
3.80	20.4	21.0
3.79	20.4	21.0
3.80	20.4	21.0
3.78	20.4	21.0
3.77	20.4	21.0
3.69	20.4	21.0
3.64	20.4	21.0
3.63	20.4	21.0
3.57	20.3	21.0
3.46	20.3	20.9
3.20	20.2	20.6
2.77	20.1	20.3
2.36	20.0	20.1
2.09	19.9	20.1
1.76	19.9	20.1
1.51	19.9	20.0
1.32	19.9	20.0
1.24	19.9	20.0
1.18	19.9	20.0
1.14	19.9	20.0
1.10	19.9	20.0
1.11	19.9	18.6

Table B7
SeaBird Background Profile 33

Decibars	Temperature °C	Salinity ppt
1.21	16.1	13.6
2.07	19.2	20.5
3.19	20.4	21.6
3.90	20.6	21.4
4.07	20.6	21.2
4.06	20.6	21.1
3.94	20.6	21.0
3.79	20.7	21.1
3.59	20.7	21.3
3.39	20.7	21.2
3.20	20.7	21.1
3.03	20.7	21.0
2.87	20.7	20.9
2.70	20.7	20.9
2.51	20.7	21.0
2.35	20.6	21.3
2.06	20.6	21.3
1.86	20.6	21.3
1.54	20.5	21.3
1.24	20.4	21.2

Table B8 SeaBird Background Profile 34		
Decibars	Temperature °C	Salinity ppt
1.15	16.3	20.7
1.18	18.8	22.2
1.31	20.1	21.4
1.42	20.4	21.4
1.61	20.4	21.4
1.90	20.5	21.4
2.09	20.5	21.4
2.23	20.6	21.5
2.45	20.6	21.6
2.74	20.7	21.6
3.10	20.7	21.7
3.62	20.7	21.7
3.87	20.7	21.6
3.91	20.7	21.6
3.91	20.7	21.6
3.84	20.7	21.6
3.76	20.7	21.6
3.60	20.7	21.6
3.54	20.7	21.6
3.47	20.7	21.6
3.42	20.7	21.6
3.37	20.7	21.6
3.27	20.7	21.6
3.14	20.7	21.6
3.01	20.7	21.6
2.89	20.7	21.6
2.76	20.7	21.6
2.64	20.7	21.6
2.54	20.7	21.6
2.39	20.7	21.6
2.31	20.7	21.6
2.22	20.7	21.7

(Continued)

Table B8 (Concluded)		
Decibars	Temperature °C	Salinity ppt
2.12	20.7	21.7
1.97	20.7	21.6
1.81	20.7	21.6
1.57	20.7	21.7
1.39	20.6	21.7
1.27	20.6	21.6

Table B9
SeaBird Background Profile 35

Decibars	Temperature °C	Salinity ppt
1.11	18.7	21.4
1.12	19.9	21.7
1.16	20.3	21.5
1.21	20.4	21.4
1.33	20.4	21.4
1.43	20.4	21.4
1.45	20.5	21.4
1.57	20.5	21.5
1.71	20.5	21.4
1.76	20.5	21.4
1.97	20.5	21.5
2.01	20.5	21.5
2.11	20.6	21.6
2.21	20.6	21.5
2.29	20.6	21.5
2.39	20.6	21.5
2.50	20.6	21.5
2.65	20.7	21.6
2.78	20.7	21.5
2.92	20.7	21.6
3.14	20.7	21.6
3.37	20.7	21.6
3.52	20.7	21.7
3.62	20.7	21.7
3.81	20.7	21.7
3.84	20.7	21.7
3.92	20.7	21.7
3.97	20.7	21.7
3.99	20.7	21.7
4.03	20.7	21.7
4.08	20.7	21.7
4.15	20.7	21.7

(Continued)

Table B9 (Concluded)		
Decibars	Temperature °C	Salinity ppt
4.36	20.7	21.7
4.46	20.7	21.7
4.51	20.7	21.7
4.54	20.7	21.7
4.55	20.7	21.7
4.54	20.7	21.7
4.40	20.7	21.7
4.25	20.7	21.7
4.19	20.7	21.7
4.07	20.7	21.7
4.04	20.7	21.7
3.99	20.7	21.7
3.98	20.7	21.7
3.72	20.7	21.7
3.41	20.7	21.7
3.35	20.7	21.7
3.07	20.7	21.7
2.87	20.7	21.7
2.68	20.6	21.7
2.55	20.6	21.7
2.36	20.6	21.6
2.07	20.6	21.6
2.02	20.5	21.6
1.58	20.5	21.5
1.38	20.5	21.5

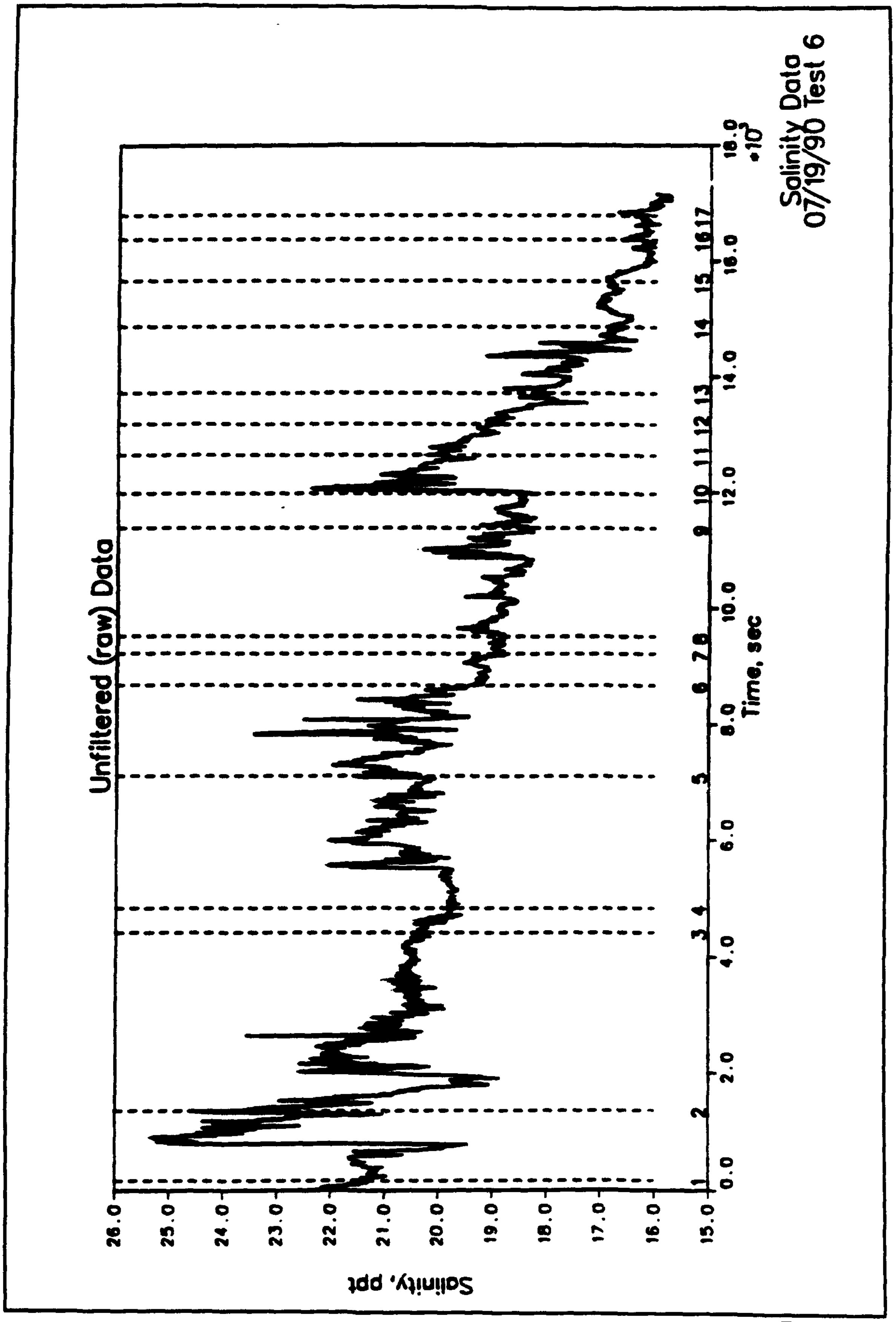

Unfiltered (raw) Data
Salinity, ppt
Time, sec
*10^3
Salinity Data
07/19/90 Test 6

Plate B1

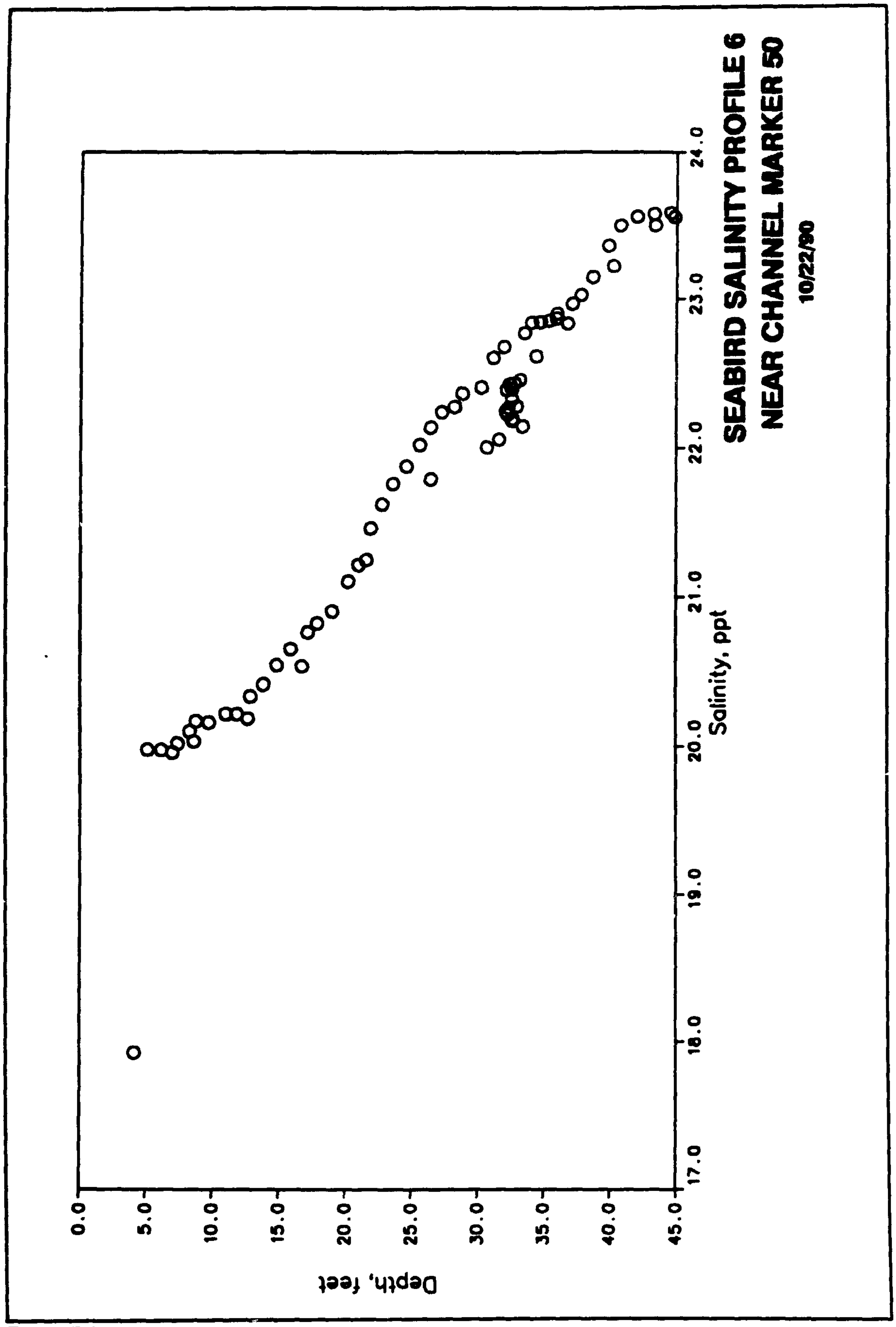
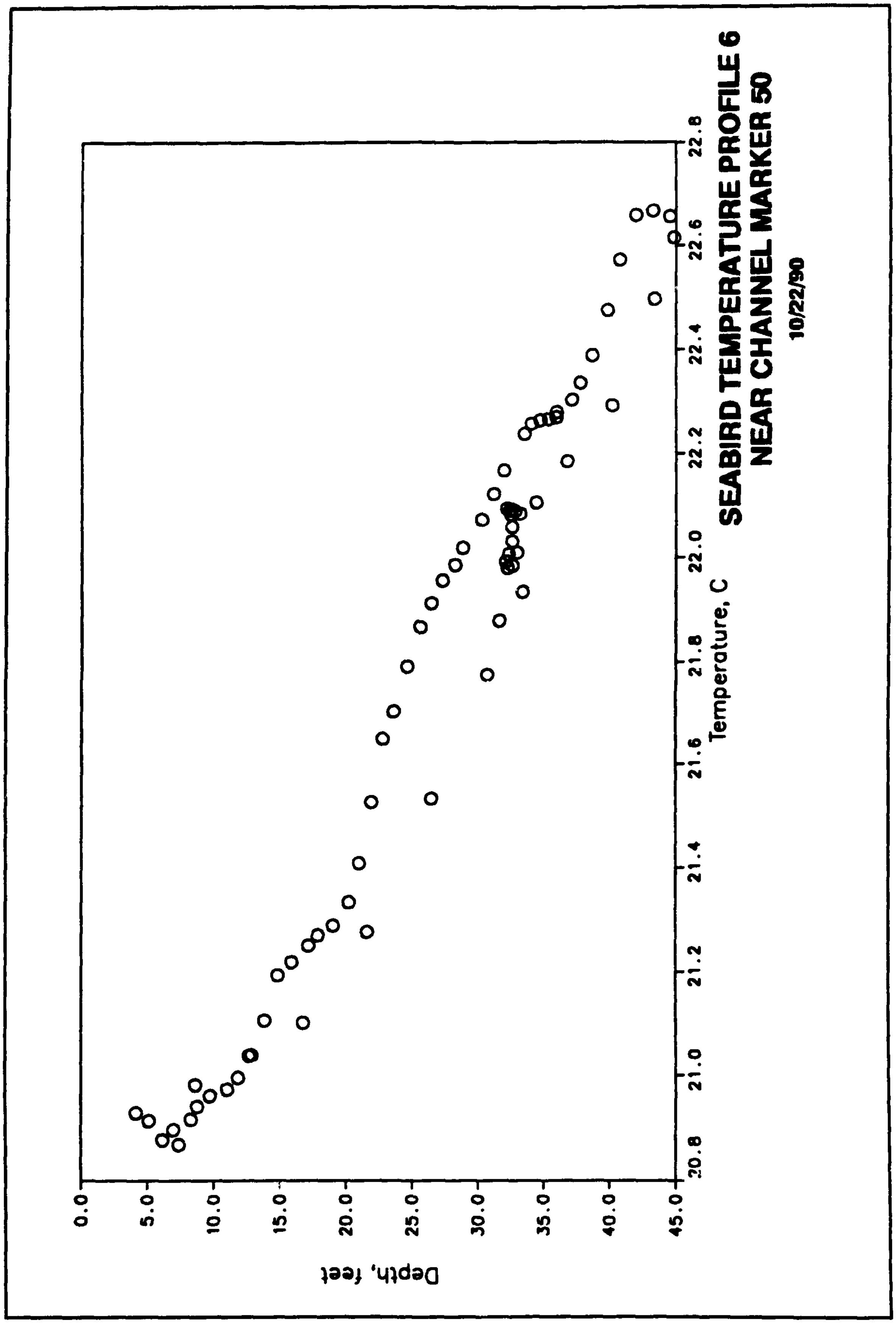

SEABIRD SALINITY PROFILE 6
NEAR CHANNEL MARKER 50
10/22/90
Salinity, ppt
17.0
18.0
19.0
20.0
21.0
22.0
23.0
24.0
Depth, feet
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0

Plate B2


SEABIRD TEMPERATURE PROFILE 6
NEAR CHANNEL MARKER 50
10/22/90
Temperature, C
Depth, feet
20.8
21.0
21.2
21.4
21.6
21.8
22.0
22.2
22.4
22.6
22.8
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10.0
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20.0
25.0
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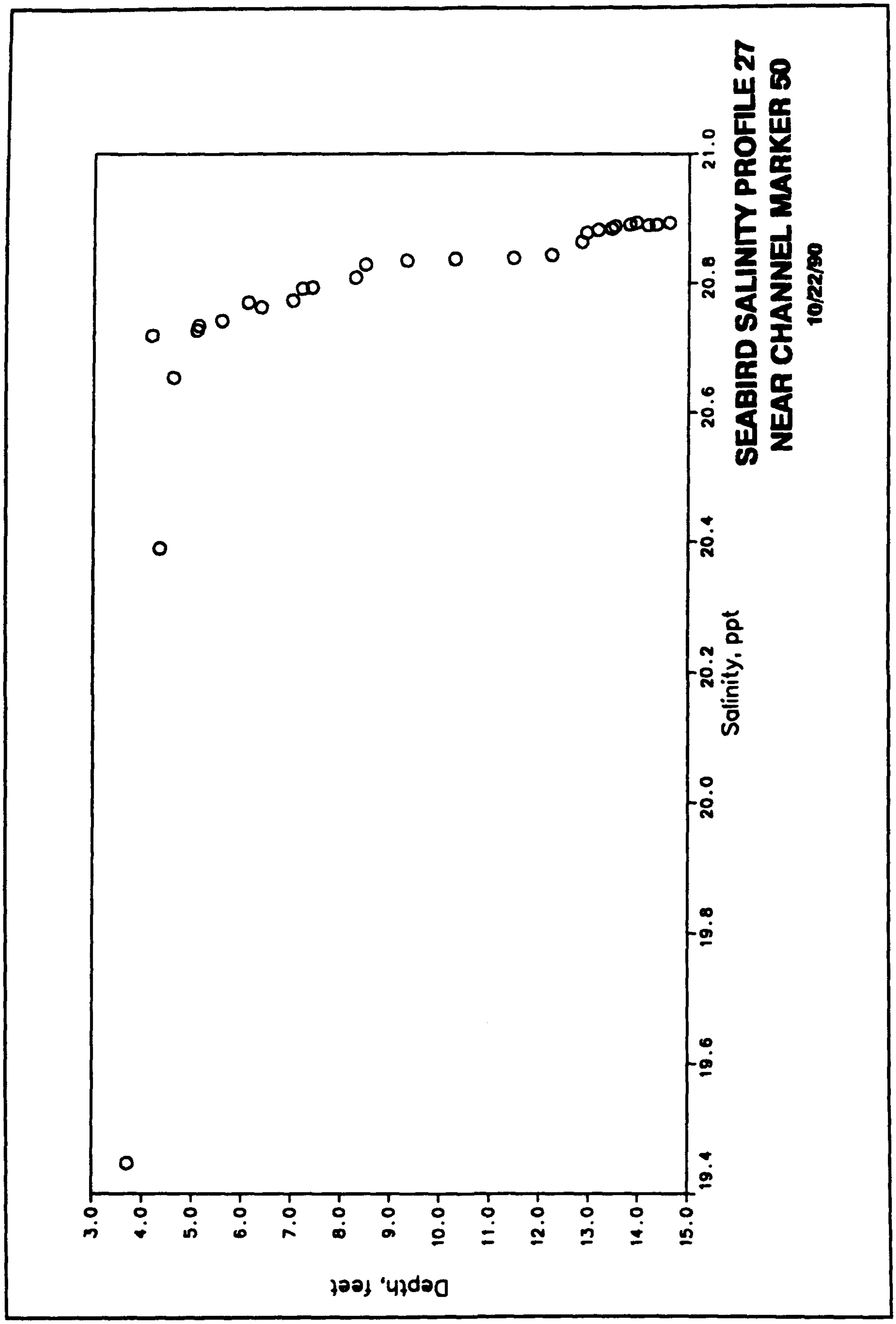
45.0

Plate B3


SEABIRD SALINITY PROFILE 27
NEAR CHANNEL MARKER 50
10/22/90
Salinity, ppt
Depth, feet
19.4
19.6
19.8
20.0
20.2
20.4
20.6
20.8
21.0
3.0
4.0
5.0
6.0
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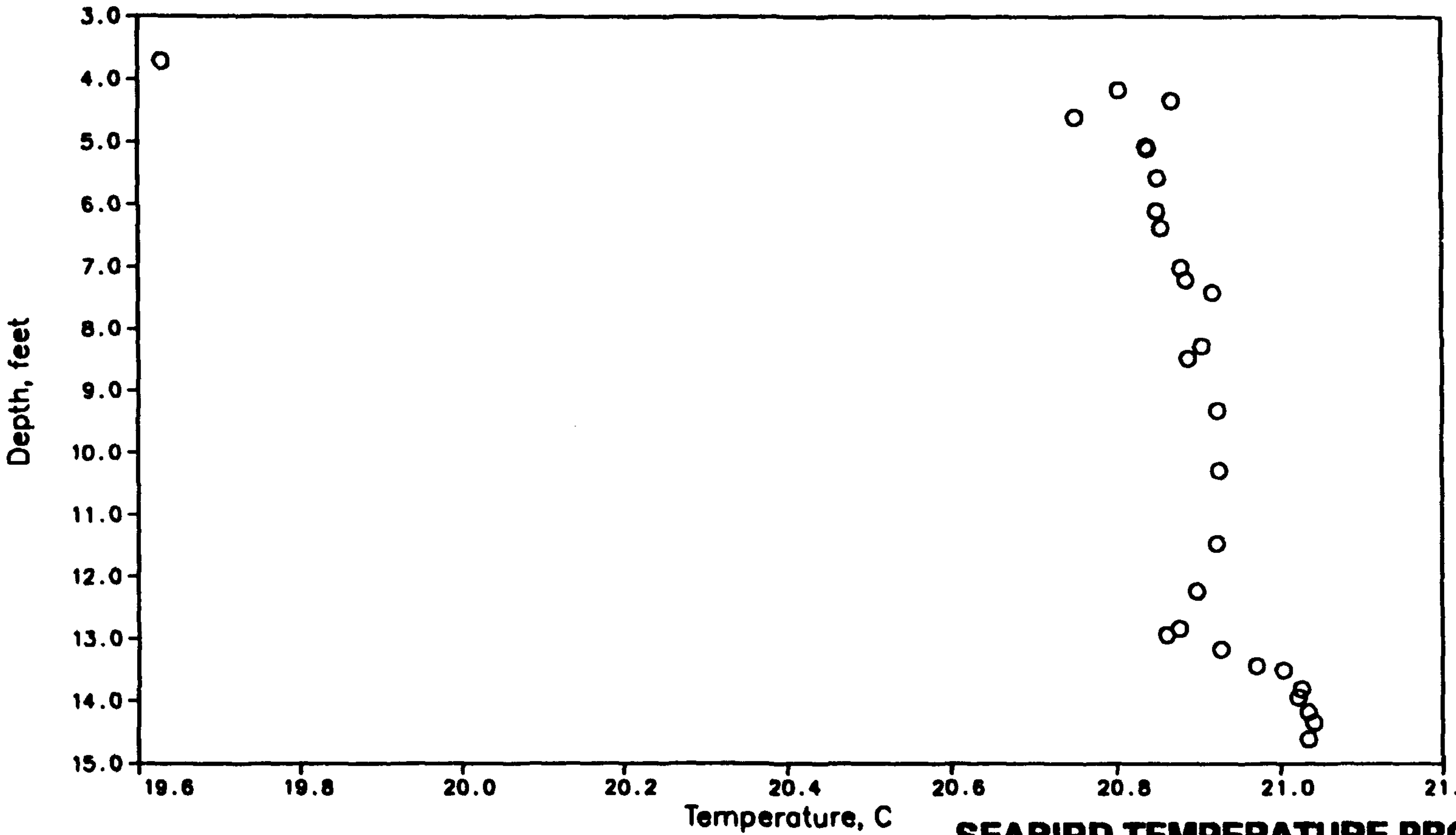
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0

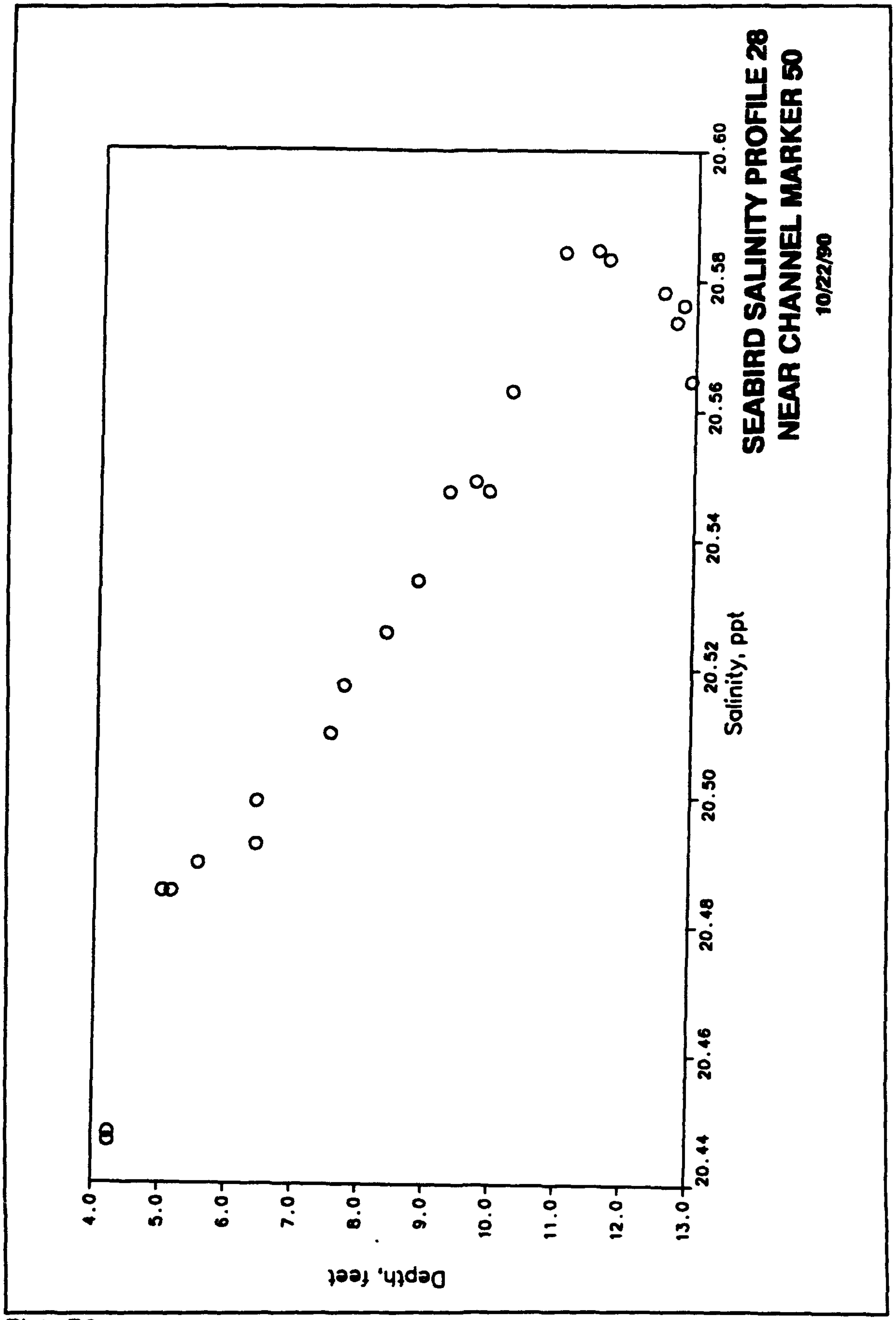
Plate B4



SEABIRD TEMPERATURE PROFILE 27
NEAR CHANNEL MARKER 50

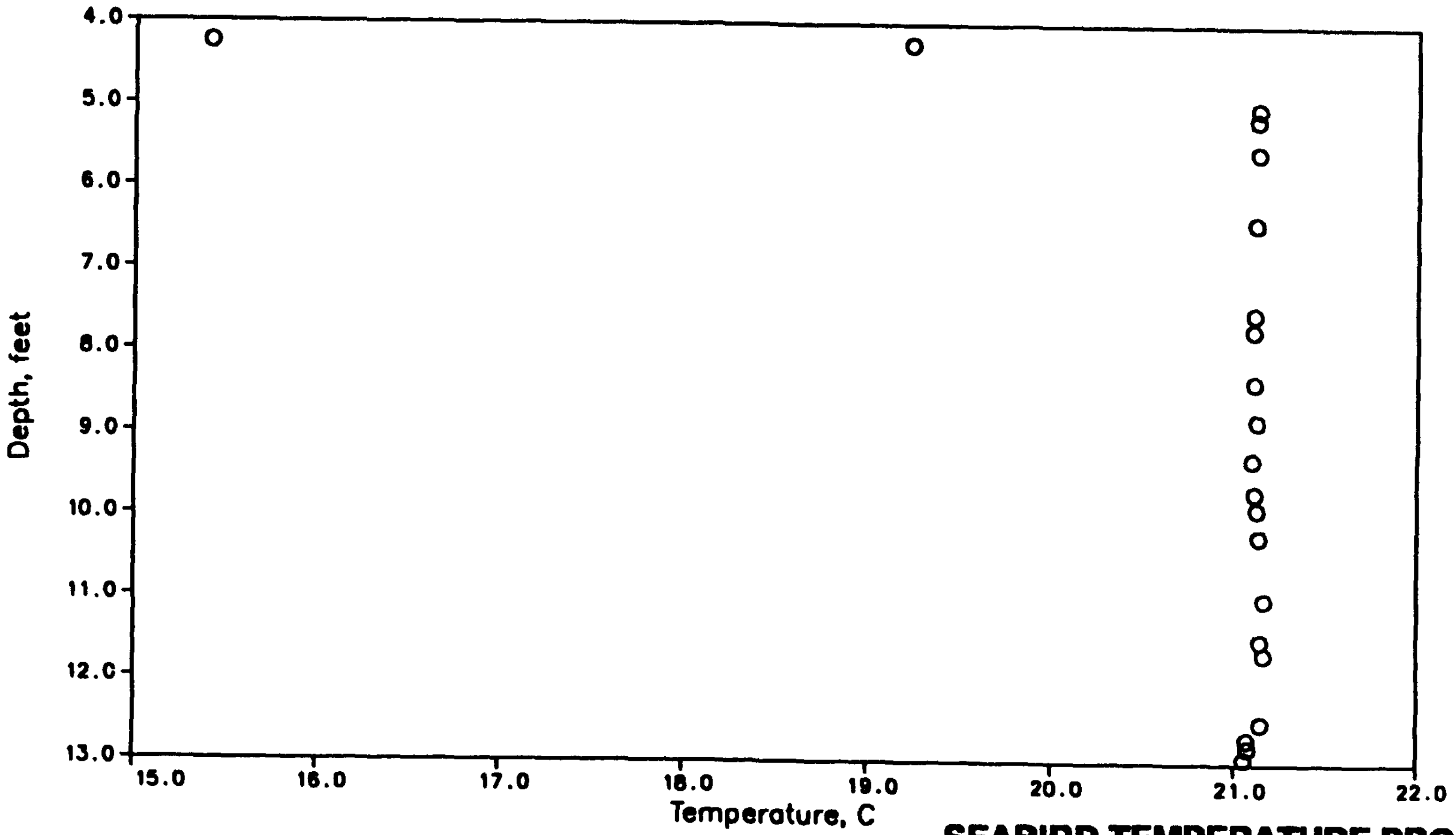
10/22/90

Plate B5



SEABIRD SALINITY PROFILE 28
NEAR CHANNEL MARKER 50
10/22/90
Salinity, ppt
Depth, feet
20.44
20.46
20.48
20.50
20.52
20.54
20.56
20.58
20.60
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0

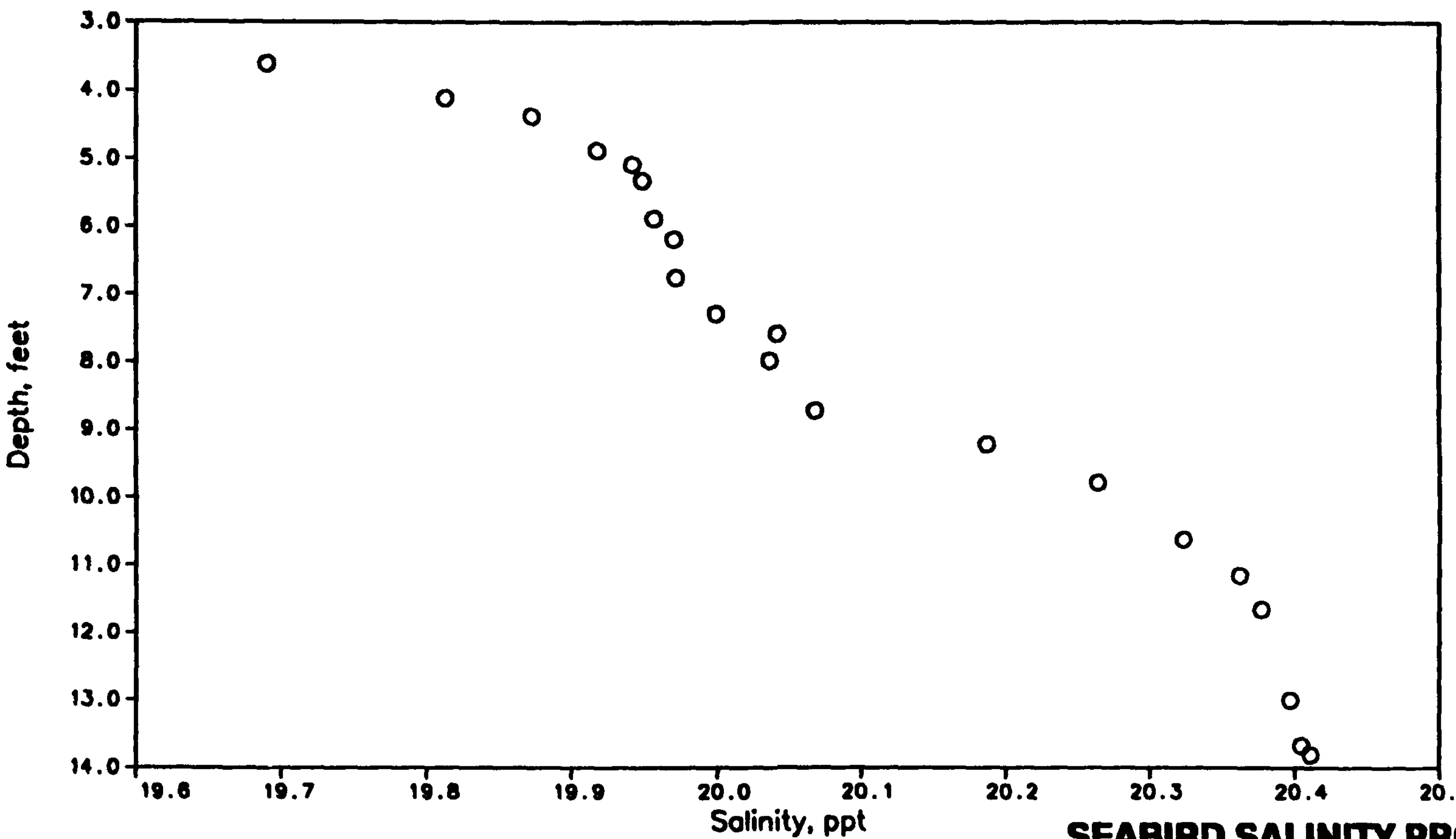
Plate B6



SEABIRD TEMPERATURE PROFILE 28
NEAR CHANNEL MARKER 50

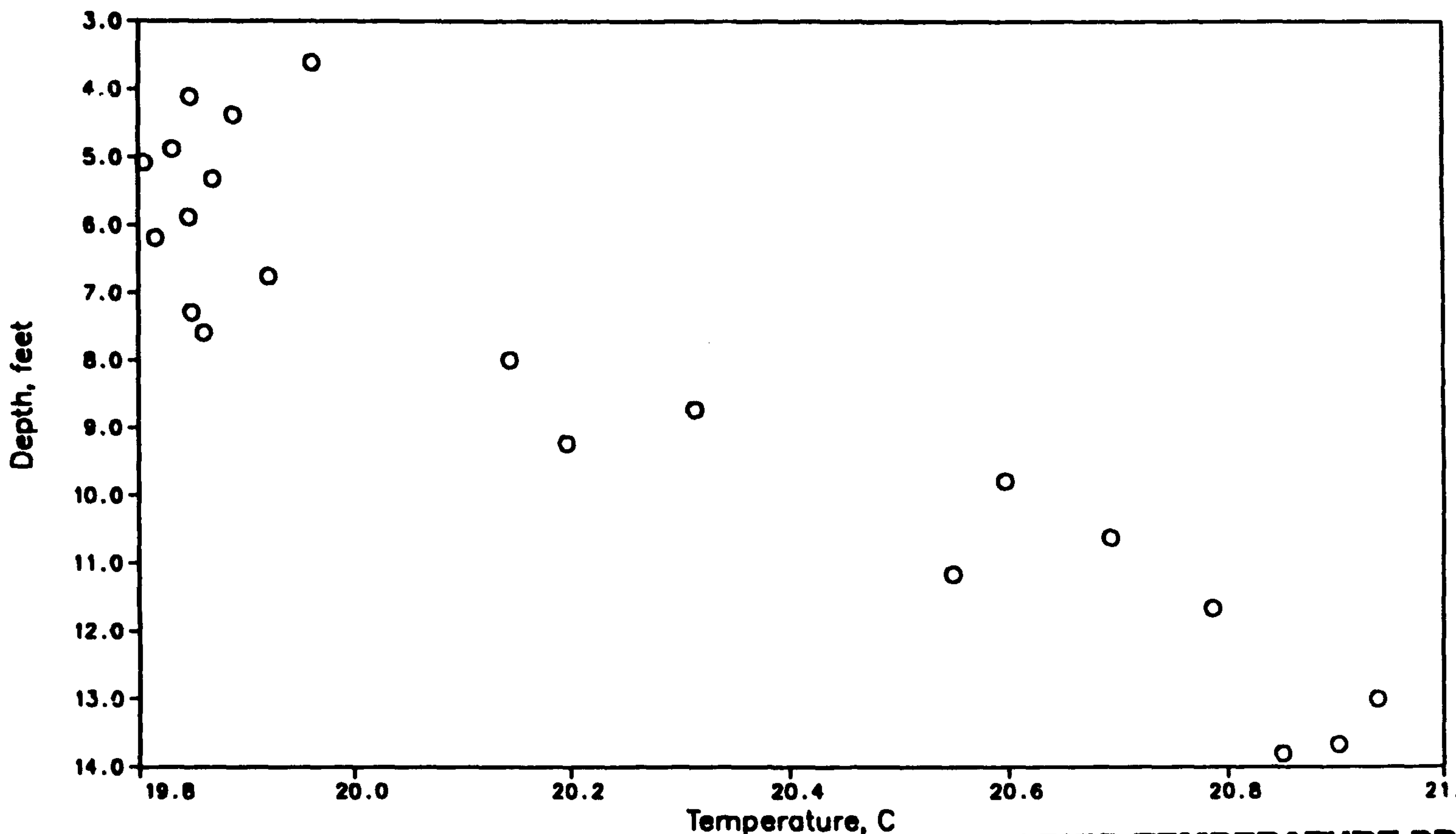
10/22/90

Plate B7



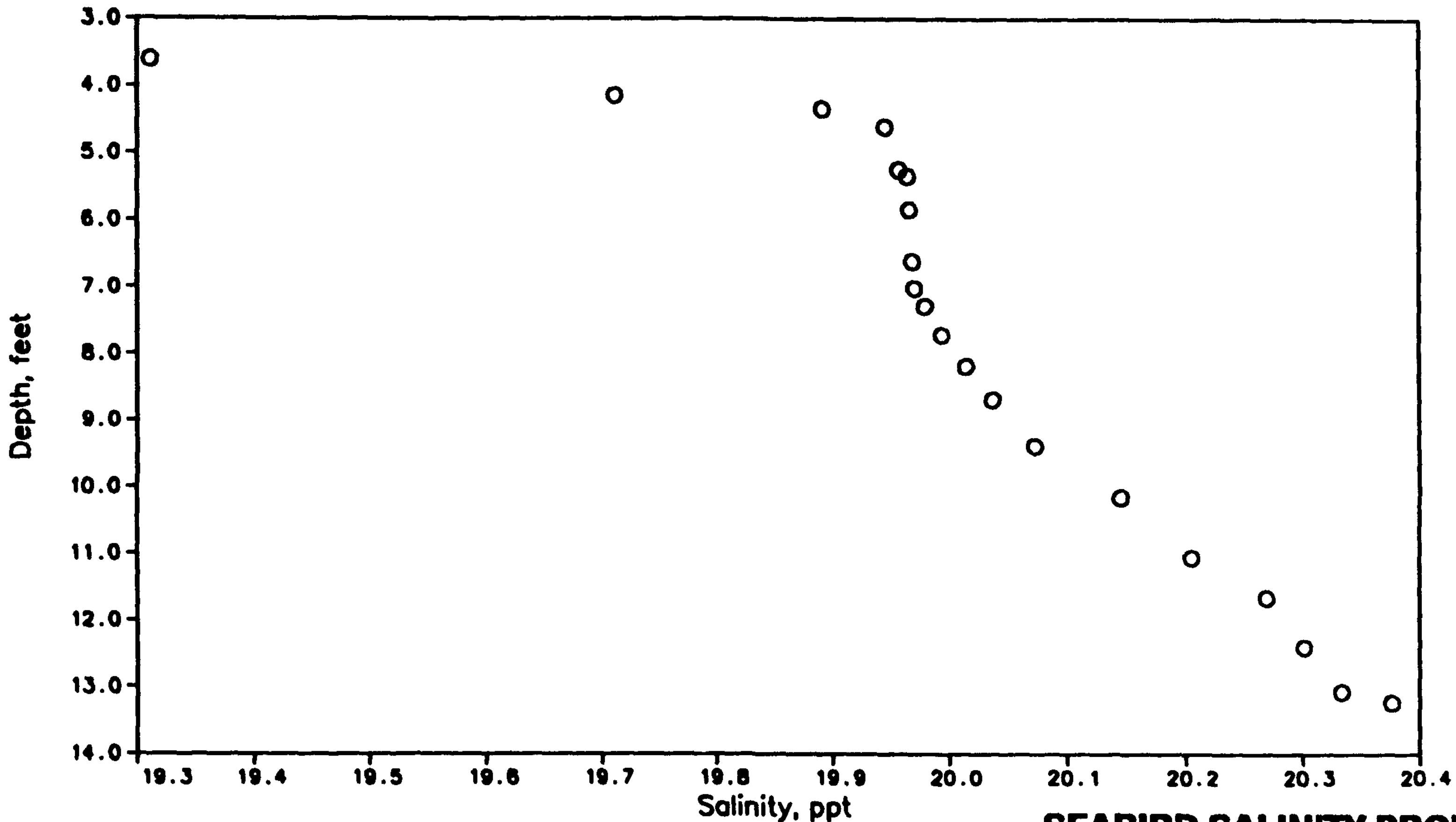
SEABIRD SALINITY PROFILE 29
NEAR CHANNEL MARKER 50
10/22/90

Plate B8

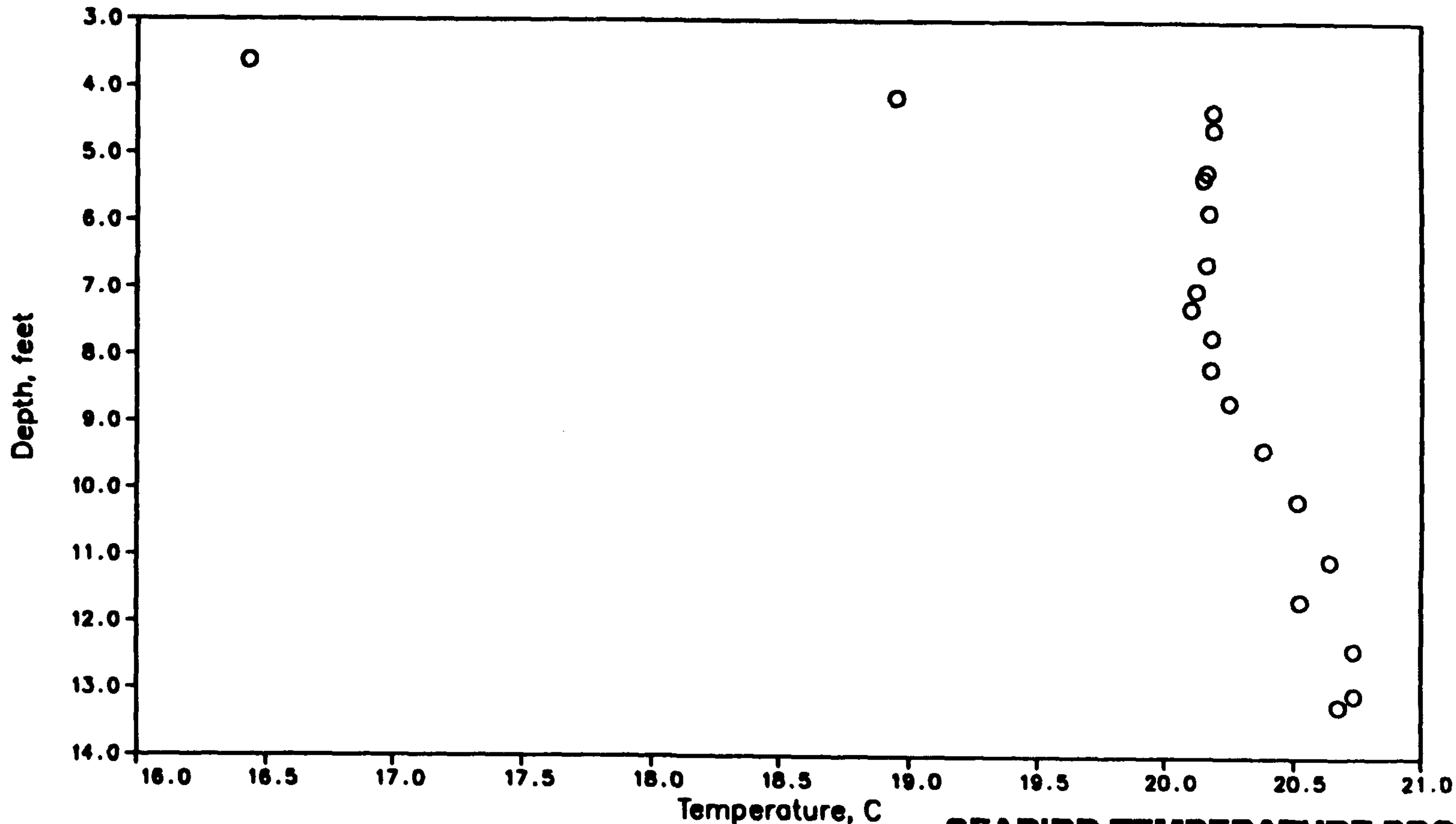


SEABIRD TEMPERATURE PROFILE 29
NEAR CHANNEL MARKER 50
10/22/90

Plate B9



SEABIRD SALINITY PROFILE 30
NEAR CHANNEL MARKER 50
10/22/90



SEABIRD TEMPERATURE PROFILE 30
NEAR CHANNEL MARKER 50
10/22/90

Plate B11

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13. ABSTRACT (Maximum 200 words)

A field hydraulic data collection program was conducted in Galveston Bay from 12 July 1990 until 16 January 1991. During this period eight current meters, six water level recorders, six salinity meters, and one wind speed and direction recorder were deployed and maintained in the bay. The current meters recorded salinity in addition to current speed and direction, and four of the water level recorders also measured salinity. Approximately half the gages were maintained at the same location for the entire survey period, while the remaining gages were redeployed at new locations at the midpoint of the survey. This redeployment allowed different areas of the bay to be monitored.

On 19-20 July 1990, intensive over-the-side measurements were made for a lunar day (25 hours) from five boats stationed along the Houston Ship Channel. From each boat, hourly vertical profiles were made at two to four stations. The vertical profiles consisted of current speed and water sample at five depths (three depths if water depth was less than 35 ft). The water samples were analyzed for salinity and total suspended matter.

These data are to be used in the verification of numerical models of Galveston Bay and in increased understanding of the physical processes working in the bay.

Appendix A presents the data collection equipment and laboratory analysis procedures, and Appendix B describes the Estuarine Boundary Layer Instrumentation System (EBIS).

14. SUBJECT TERMS
Current meters
Salinity
Ship channel
Suspended sediment
Water-levels

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